CANADIAN INDUSTRY IN 1871

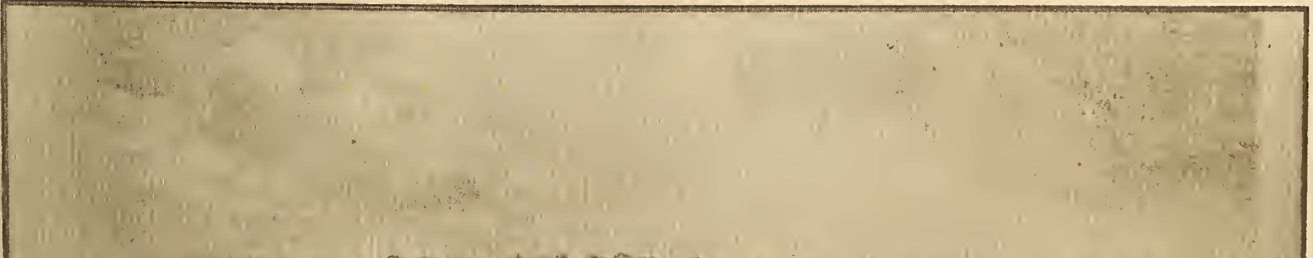
Research Report 3

THE ONTARIO URBAN SYSTEM AT THE ONSET OF THE INDUSTRIAL ERA

Elizabeth Bloomfield and G.T. Bloomfield

Elizabeth Bloomfield, series editor

November 1989



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The view of Whitevale, Township of Pickering, was chosen to illustrate Canadian industry in 1871. At this time, a high proportion of manufacturing activity was still located in small settlements, some of which were growing rapidly into towns. **Lovell's Directory** (1871) described Whitevale as:

> A thriving village...[with] extensive flouring and woollen mills... Montreal Telegraph Co has an office here. Distant from Whitby, the county town, and a station of the Grand Trunk Railway, 13 miles. Mail daily. Population about 250.

Truman P. White has acquired the water rights at Majorville on Duffin's Creek in 1845 and developed a grist mill, a saw mill and, later, a woollen mill. By 1871 the census enumerated six significant industrial establishments employing 66 workers and with a total value of production amounting to $125,000. The transition from waterwheels (70 horsepower) to steam engines (66 horsepower) was already apparent in the village by this date. In common with its counterparts across the country, Whitevale's basic industrial activities were closely associated with the local agricultural area. There was also considerable economic integration apparent in the ownership of several establishments by Truman P. White and in the making of staves in the sawmill for the cooper shop which in turn supplied the flour mill with basic containers for transporting the flour to market.

Unlike many of its contemporaries, Whitevale has remained about the same size ever since 1871. The 1971 census recorded a population of only 273 in the unincorporated settlement. Whitevale never achieved connection by railway, county road or provincial highway. Much of the surrounding land was acquired for the planned Pickering airport and new town in 1972/3 and today the settlement is threatened by the creation of a municipal solid waste dump for Metropolitan Toronto and the Durham Region.

The illustration was first published in the **Illustrated Historical Atlas of the County of Ontario** (Toronto: J.H. Bees and Co., 1877), reprinted Ross Cumming, 1972).

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CANADIAN INDUSTRY IN 1871 (CANIND71) PROJECT

Between 1982 and 1989, a project based in the Department of Geography, University of Guelph, has made machine-readable the full data for some 45,000 industrial firms that were enumerated in Canada's first national census in 1871. A uniquely valuable source is thus becoming accessible to scholars and researchers in several disciplines. The 1871 schedules contain a wealth of information which was not published at the time or later. Although similar details were collected in the censuses of 1881, 1891, 1901 and 1911, none of the manuscript schedules for those years have survived. The CANIND71 database has great significance in being a detailed 'snapshot' of industrial activity just after Confederation, at a time of transition in industrial technology, business organization and work discipline. The records include examples of all kinds of industrial work environments from mills and artisanal craftshops in mainly rural settings to factories, manufactories and sweatshops in the growing towns and cities.

The CANIND71 project is important for its methodological experience in handling large quantities of historical data and making them accessible to users. Relevant aspects include the total coverage of all establishments and all variables recorded in the original source and our dedication to making the material available to others in a variety of software environments and with full explanation of the source and methodology. As well as the data for each establishment, we have added precise geographical references and Standard Industrial Classification codes (SIC) for all establishments, which permit both the retrieval of details for individual businesses and their systematic aggregation by industry type or geographical area.

Creation of the CANIND71 database has been assisted by several grants from the Social Sciences and Humanities Research Council of Canada between 1985 and 1989. The most substantial of these were Grants 482-87-0010 and 482-88-0010 to Elizabeth Bloomfield as principal investigator, in the Strategic Grants Program: Women and Work Theme. These grants, totalling $114,000, supported the most intensive phase of database creation in 1988 and 1989. Other SSHRC grants to Elizabeth Bloomfield (principal) in 1985 and to Kris Inwood (principal) in 1988 have also helped. In addition, smaller grants from the University of Guelph to Gerald Bloomfield and Kris Inwood have supported the project for short periods. Personal funds have also been necessary. Some preliminary activity on the Maritime data during 1986 was helped by a grant from St Mary's University, Halifax, to Professor Inwood and Professor John Chamard.

The officials responsible for the original 1871 Census of Canada believed that the information they collected and collated was 'as accurate as is humanly possible.' In our turn, we are devoting several months in 1989-1990 to rigorously checking and editing the SAS datasets for Ontario, the Maritimes and Quebec on the mainframe computer. We expect that the final version of the whole database will be available for others to use from January 1991. Those interested in obtaining the whole database or partial datasets should contact Dr Elizabeth Bloomfield, C/- Department of Geography, University of Guelph, Guelph, Ontario, N1G 2W1, after September 1990.

CANADIAN INDUSTRY IN 1871 PROJECT: RESEARCH REPORTS

1. **Industry in Ontario Urban Centres, 1870: Accessing the Manuscript Census**, Elizabeth Bloomfield, Gerald Bloomfield, Janine Grant and Peter McCaskell (1986).

2. **Water Wheels and Steam Engines: Powered Establishments in Ontario**, Gerald Bloomfield and Elizabeth Bloomfield (1989).

3. **The Ontario Urban System at the Onset of the Industrial Era, 1871**, Elizabeth Bloomfield and Gerald Bloomfield (1989).

4. **Creating CANIND71: Procedures for Making the 1871 Industrial Census Machine-Readable**, Elizabeth Bloomfield and Gerald Bloomfield (1989).

5. **Glossary of Industrial Language**, Jane Turner, Janine Grant and Barbara Sibley (1989).

6. **French-English Dictionary of Industrial Language**, Jane Turner, Janine Grant and Barbara Sibley (1989).

7. **Standard Industrial Classifications Applied to Historical Data: the Case of the 1871 Industrial Census**, Gerald Bloomfield and Elizabeth Bloomfield (1989).

8. **Industrial Leaders: The Largest Manufacturing Firms in Ontario, 1871**, Elizabeth Bloomfield and Gerald Bloomfield (1989).

9. **The Hum of Industry: Millers, Manufacturers and Artisans of Wellington County**, Elizabeth Bloomfield and Gerald Bloomfield (1989).

ACKNOWLEDGEMENTS

The interest and support of all who have assisted with the project are gratefully acknowledged. During the earlier phases, on which this report is mainly based, Janine Grant and Stephen Bellinger coded data for Ontario's urban places. From May 1985 to June 1989, Janine Grant was on the project staff, joined during the final 18 months by Barbara Sibley. The quality of the final database owes much to their careful and thorough work. Peter McCaskell, first as programmer-analyst in the Department of Geography and then from Computing Services, has helped substantially with database management and programming throughout the project. He also assisted with most of the data analysis for this particular report. Marie Puddister has drafted maps and diagrams for the various project reports. We appreciate the shelter provided to this project by the Department of Geography, University of Guelph throughout the 1980s.

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1 INTRODUCTION

Following other economically advanced societies in Western Europe and North America, Canada underwent an urban-industrial transformation in the later nineteenth and early twentieth centuries. The enormous expansion of manufacturing industry and its concentration in urban places led contemporary observers, as well as later commentators, to remark on a positive association between the processes of urbanization and industrialization, and to characterize industry as the engine of urban growth.

Urban-industrial growth processes have usually been considered in the abstract or in generalized national terms.[1] For Western Europe and North America, the central identifying characteristic of industrialization is agreed to have been the rise in per capita income based on major and continuing changes in technology and organization. These changes included the use of machines driven by inanimate energy for industrial processes, the specialization and co-ordination of industrial labour, and economies of agglomeration. The processes of industrial capitalism tended to concentrate spatially, if sometimes selectively, in existing urban places and to stimulate further growth as well as social change in cities and towns. Thus industrialization both reflected and reinforced urbanization.

A renewed interest in urban-industrial growth processes has been prompted by the negative aspects of de-industrialization. It is reflected in an urban theorist's assertion that "industrialization as a generalized process of economic organization and social integration (involving the social division of labour, the transactional nature of production and the dynamics of local labour market formation) is the basis of modern urban development".[2] Empirical research at the national level supports this, the authors of a comparative analysis of European nations concluding that the level of industrialization was clearly the most important factor explaining national variations in urbanization.[3] Recent areas of interest in this field include the preconditions for the development of modern industry in particular places, including the phenomenon of "proto-industrialization", and the ways in which the transition from domestic to

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[1] Classic statements on the interacting processes of urbanization and industrialization include: A.F. Weber, The Growth of Cities in the Nineteenth Century (New York, 1899); E. Lampard, "The History of Cities in the Economically Advanced Areas", Economic Development and Cultural Change 3 (1954-5): 81-136; E. Lampard, "The Evolving Systems of Cities in the United States: Urbanization and Economic Development", in Issues in Urban Economics, edited by H.S. Perloff and L. Wingo (Baltimore: Johns Hopkins Press, 1968); A.R. Pred, The Spatial Dynamics of U.S. Urban-Industrial Growth (Cambridge, 1966).

[2] A.J. Scott, "Industrialization and Urbanization: A Geographical Agenda", Annals of the Association of American Geographers 76, 1 (1986): 35.

[3] Paul Bairoch and Gary Goertz, "Factors of Urbanisation in Nineteenth Century Developed Countries: A Descriptive and Econometric Analysis", Urban Studies 23 (1986): 295.

factory industry affected work experience.[4] As O'Brien has remarked, a regional and local focus would seem fruitful in addressing these research problems, but so far urban historians have not been taken them up.[5]

In Canada, the notion of an industrial era has served as a convenient framework for studies in economic, labour, social and urban history. It has been generally assumed that Canada underwent an industrial revolution in the second half of the nineteenth century, and that by 1870 at least the larger cities such as Montreal, Toronto and Hamilton had attained a significant degree of industrialization and a system of early industrial capitalism. This was a critical time of transition from domestic and artisanal industry to larger-scale factory production. The decades from 1870 to about 1930 have been designated an "industrial era" for Canadian cities, when the main stimulus to growth was manufacturing, in contrast to the local and long-distance trade of the preceding "commercial era".[6]

However, the relationship between the processes of urbanization and industrialization in Canada has not yet been directly and systematically studied.[7] One reason for this has been a lack of accessible information on

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[4] Maxine Berg, ed. Manufacture in Town and Country Before the Factory (Cambridge University Press, 1983): 1-59.

[5] P.K. O'Brien, "Do We Have a Typology for the Study of European Industrialisation in the XIXth Century?" Journal of European Economic History 15, 2 (1986): 297-304.

[6] M. Cross and G. Kealey, eds. Canada's Age of Industry, 1849-1896 (Toronto, 1983): 9; G.C. Kealey, Toronto Workers Respond to Industrial Capitalism (Toronto, 1980): xv; M.B. Katz, M.J. Doucet, and M.J. Stern, The Social Organization of Early Industrial Capitalism (Cambridge, 1982): 17, 50; J.C. Weaver, Hamilton: An Illustrated History (Toronto, 1982): 79 ff.; G.A Stelter, "The City-Building Process in Canada", in Shaping the Urban Landscape: Aspects of the Canadian City-Building Process, edited by G.A. Stelter and A.F.J. Artibise (Ottawa, 1982): 5, 18-19.

[7] Several important studies in the 1960s documented the growth of Canadian manufacturing since 1870, mainly at the national level of aggregation: G.W. Bertram, "Historical Statistics on the Growth and Structure of Manufacturing in Canada, 1870-1937", Papers, Canadian Political Science Association Conference on Statistics (1962-1963): 93-151; G.W. Bertram, "Economic Growth in Canadian Industry, 1870-1915: The Staple Model and the Takeoff Hypothesis", Canadian Journal of Economics and Political Science 29 (1963): 159-184. One pioneering project examined the growth of manufacturing in selected "urban areas" of Central Canada between 1870 and 1890, though the data limitations of that time meant that the urban areas had to be county units rather than actual cities or towns (E.J. Chambers and G.W. Bertram, "Urbanization and Manufacturing in Central Canada, 1870-1890", in Papers on Regional Statistical Studies, edited by S. Ostry and T.K. Rymes (Toronto, 1966): 225-254. Other significant work has concentrated on either industry or urban growth rather than the connection between them. In the first category is J.M.

industry at the level of particular urban centres. A new source, derived from the industrial schedules of the 1871 manuscript census, now permits us to explore the period of transition at the onset of the industrial era in Canada. This report is based on the results of a project which is making accessible data for industrial establishments in the four Canadian provinces of 1871 - New Brunswick, Nova Scotia, Ontario and Quebec.

Our procedures in coding the uniquely valuable manuscript data for all 1871 industrial establishments, according to their detailed location and industrial classification, permit all individual firms to be retrieved, indexed and sorted, but also to be aggregated into geographical units or industry classes. For industrial activity in 1871, we may now link macroscale with microscale levels of description and analysis. Scholars interested primarily in particular businesses or communities can use the whole database for valuable comparative context. Those who are concerned mainly with the aggregate overview will be able to reconstitute the structure, distribution, technology, organization and operations of industrial activity, and to illuminate this broader picture with the rich variety of individual firm experiences.

The one drawback of the 1871 database is its very uniqueness, in that no similarly detailed Canadian census data survive for any later year; thus it is impossible to trace continuity and changes over time on a consistent basis from manuscript census sources. The year 1871 has to be considered a benchmark and the database as a slice through continuous processes of economic change and industrial development. From 1871, we may reach back to trace the origins and early stages of particular enterprises and to unravel the process of early industrialization by drawing upon other primary source fragments. We may also follow the subsequent development of specific firms and communities since 1871.[8]

Gilmour, Spatial Evolution of Manufacturing: Southern Ontario 1851-1891 (Toronto: Department of Geography, University of Toronto, 1972), which also had to use aggregated county units as well as census occupational data to supplement industrial statistics. Two studies of urban development in Ontario related urbanization more to central-place functions or to improvements in rail transport than to manufacturing industry. These are J. Spelt, Urban Development in South-Central Ontario (Assen, 1955, reprinted Carleton Library, 1972); W.R. Smith, Aspects of Growth in a Regional Urban System: Southern Ontario, 1851-1921 (Downsview: Department of Geography, York University, 1982). Simmons, in analyzing the economic specialization of urban places with over 10,000 population in 1971, concentrated on non-manufacturing cities: J.W. Simmons, "The Evolution of the Canadian Urban System", in The Usable Urban Past: Planning and Politics in the Modern Canadian City, edited by A.F.J. Artibise and G.A. Stelter, 9-34 (Toronto, 1979).

[8] Project procedures are discussed in more detail in Elizabeth Bloomfield et al. Industry in Ontario Urban Centres, 1870: Accessing the Manuscript Census (Guelph: Department of Geography, University of Guelph, 1986), and in Gerald Bloomfield and Elizabeth Bloomfield, "Accessing the 1871 Census Manuscript Data: Potential and Methodology for Demographic Analysis",paper presented at Annual Meetings of Canadian Association of Geographers: Special

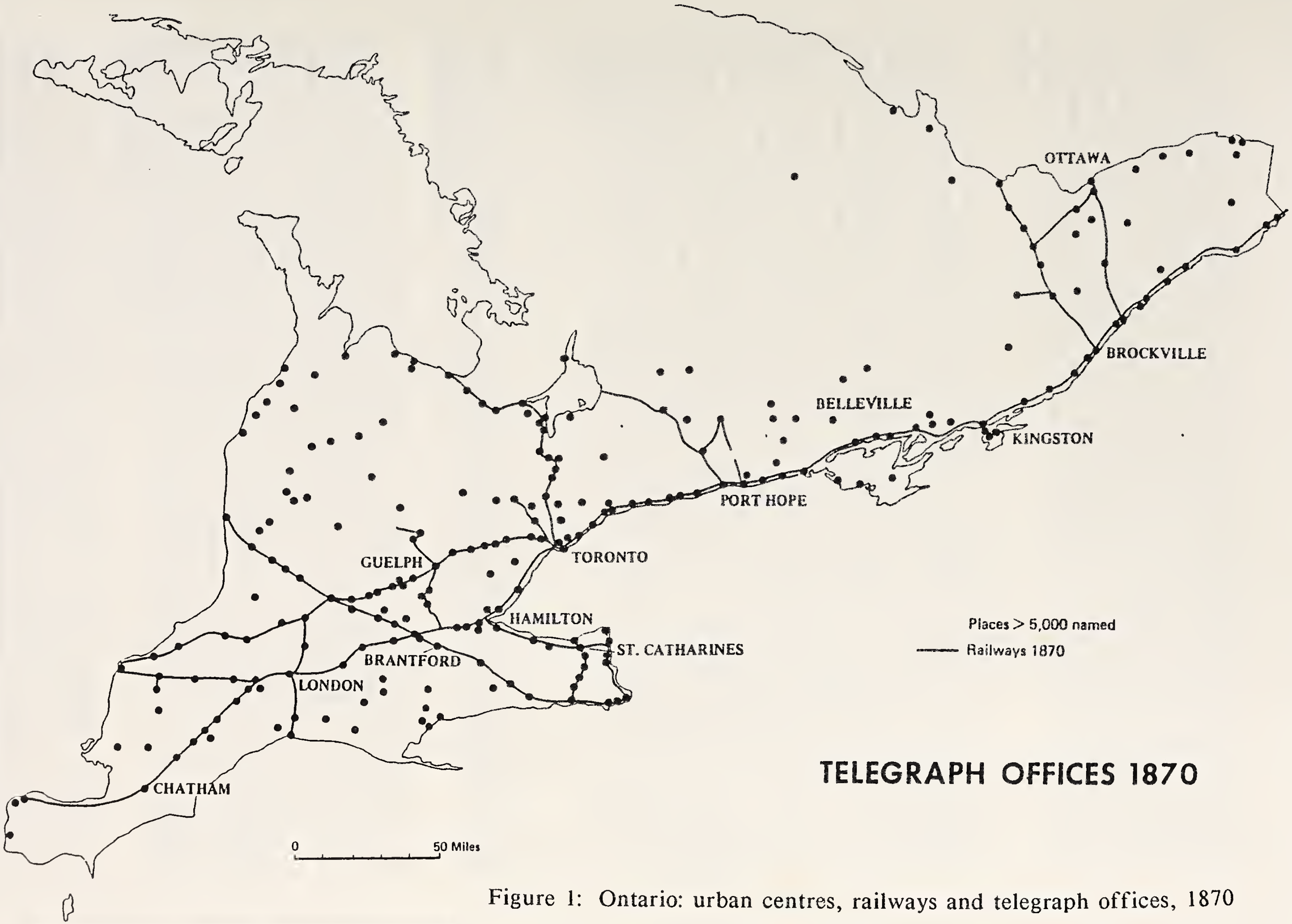

Figure 1: Ontario: urban centres, railways and telegraph offices, 1870

A systematic, comparative approach to the experience of all urban centres in a regional system offers a useful perspective for understanding processes of change in the "industrial era". On the one hand, it can provide historians with a substantive and methodological framework for case-studies of individual towns and cities, showing in which respects their experience was similar and in what ways they were unique. On the other hand, the research can contribute to general concepts and models of urbanization and industrialization by addressing key questions about these interacting processes in one regional setting.

Ontario had various advantages for urban-industrial growth in the last third of the nineteenth century, being a closely settled and productive agricultural region, located centrally within Canada and close to the emergent manufacturing belt in the United States. By 1871, the region had a basic rail network, connecting the larger urban centres (Figure 1). Industry here did not, however, develop on the basis of obvious natural resources such as local coal or iron ore, and there were no classic coketowns or dark satanic mills. Large numbers of urban municipalities were incorporated early in Ontario, earlier than elsewhere in Canada, and local councils took advantage of their powers to promote improvements in transportation and generally to stimulate growth.[9] In 1871, Ontario had 51.8 per cent of Canada's total industrial production (1.17 times its share based on population). The region maintained and strengthened its leading position so that by 1929, despite the vast expansion of Canada's settled area in the West, Ontario had 53.3 per cent of Canada's total value of industrial production, or 1.61 times its share per capita.[10]

Session on Historical Population Geography of Canada, Hamilton, May 1987. See also Creating CANIND71: Procedures for Making the 1871 Industrial Census Machine-Readable, #4 in this series of research reports.

[9] For the incorporation history of Ontario urban municipalities, see Elizabeth Bloomfield and Gerald Bloomfield, Urban Growth and Local Services: The Development of Ontario Municipalities to 1981 (Guelph: Department of Geography, University of Guelph, 1983): 12-31. For an introduction to municipal inducements in Ontario, see Elizabeth Bloomfield, "Municipal Bonusing in Ontario: The Legislative Framework in Ontario to 1930" Urban History Review 9, 3 (9181): 59-76; Elizabeth Bloomfield, "Community, Ethos and Local Initiative in Urban Economic Growth: Review of a Theme in Canadian Urban History" Urban History Yearbook (1983): 53-72; Elizabeth Bloomfield, "Bonusing and Boosterism: Industrial Promotion by Ontario Municipalities to 1930" Planning History Bulletin 7, 2 (1985): 23-29.

[10] For a survey of themes and sources in the economic history of Ontario in the nineteenth century, see: D. McCalla and P. George, "Measurement, Myth and Reality: Reflections on the Economic History of Nineteenth-Century Ontario", Journal of Canadian Studies 21 (1986): 71-86. See also Ian M. Drummond, Progress Without Planning: The Economic History of Ontario from Confederation to the Second World War (Toronto: University of Toronto Press, 1987).

Industrial activity in the Ontario urban system is explored in four main sections, each addressing a question. First, we consider the question "How urban was industrial activity in Ontario in 1871?" in general overall terms. Next, the variable significance of industry in particular sizes and types of Ontario urban centres is illustrated in pondering the question, "How specialized or diversified were the industrial structures of Ontario urban centres?" Third, variations in the organization of early industrial capitalism and thus in the work environments of the urban industrial labour force are discussed, in seeking to answer the question "How do the Ontario data illustrate the concurrent phases of capitalist modes of production?" Finally, we discuss what must still be done in order to answer the questions "What were the critical factors and stages in the development of modern industry and its concentration in urban centres?" and "Was industry the engine of urban growth in Ontario?"

2 HOW URBAN WAS INDUSTRIAL ACTIVITY IN ONTARIO IN 1871?

Ontario urban centres were disproportionately significant as the locus of industrial activity. The 110 Ontario cities, towns and villages and 38 "proto-urban" places defined for 1871 had under 24 per cent of the province's population.[11] But together they accounted for 32 per cent of the industrial establishments, 45 per cent of the steam power used in industry, 59 per cent of the industrial labour force, 64 per cent of the gross value of production and 67 per cent of the value added in manufacturing. Women and children were more commonly employed in urban industries, which had seven of every ten of the women and girls and more than six in ten of the boys employed in Ontario's factories, mills, manufactories and craftshops. Ontario's largest industrial establishments, whether considered as producers or employers, were overwhelmingly concentrated in urban centres. Of the 178 Ontario firms which produced over $100,000 worth of manufactured goods in 1871, 158 (or 84 per cent) were in urban centres. Of the 79 largest employers, those with at least 100 workers, 68 (or 86 per cent) were located in cities, towns and villages.

Urban industrial establishments were generally larger and more productive than rural ones. On the average, they employed over eight workers compared with well under three for rural establishments. Urban firms averaged $4,444 in

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[11] All cities, towns and villages incorporated as municipalities in Ontario by 1871, and defined as census sub-divisions in the 1871 census, were considered urban for the purposes of this analysis. In addition, we were interested in more than 40 other places that would become incorporated by the end of the nineteenth century and were also industrial centres of sufficient significance to be included in our Industrial Time-Series database. The 38 "proto-urban centres" whose industrial establishments were included in this study together accounted for 3.5 per cent of all Ontario establishments, 3.9 per cent of industrial workers, and 55.7 per cent of the value of industrial production. For an explanation of our rationale and procedures in defining these "proto-urban" centres, see Appendix A-3. All urban and proto-urban places considered in this report are listed in Appendix A-1 in alphabetical order and in Appendix A-2 in geographical order; the proto-urban places are indicated by an asterisk.

fixed capital investment while the mean for rural firms was only $1051. The average value added in manufacturing by an urban industrial worker was $617, compared with only $441 for a rural worker. Urban workers also earned more, an average $277.17 for 1871, while the mean for rural workers was only $178.10. Of course, these generalized statistics mask wide variations in the gender and age composition of the labour force and in the seasonality of employment, as well as in the scale of operation of industrial enterprises.

The degree of urban concentration of industrial activity varied by sector, as Table 1 shows, with particularly high urban shares of over 80 per cent for tobacco products, primary metals, printing, miscellaneous products, clothing, furniture and metal fabricating, machinery and paper, as well as utilities and construction.[12] The lower urban shares of the food, textile, wood and non-metallic mineral sectors reflect the large numbers of grist and flour mills, cheese factories, woollen mills, carding and fulling mills, sawmills and lime kilns in rural areas. On the whole, we may distinguish those industry groups more characteristically found in rural areas as **processing** or **primary** manufacturing, while the industries concentrated in urban areas may be generally described as **fabricating** or **secondary** manufacturing.[13] The distinction is illustrated in the contrasting distribution patterns of sawmills and furniture-makers in 1871 (Figures 2 and 3). Sawmills that processed wood products close to the forest sources were more characteristically found in rural areas while furniture factories where the sawn lumber was fabricated by more intensive application of labour into goods for consumers were located in the urban centres.

Yet even in those industry groups or sectors that were overwhelmingly rural, it is notable that the establishments located in urban centres were more productive than those in rural areas. The "urban PRODEST index" reported in Table 1 is calculated by relating the average value of production per urban industrial unit to the average value of production for all Ontario establishments in each sector. An index of 1.00 means that the average production of an urban unit was equal to the average for all establishments in that sector, an index of above 1.00 that urban units were more productive, and an index of under 1.00 that urban units were less productive than the mean for that sector. The indices listed in Table 1 show that urban establishments

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[12] Industry was defined more widely for the 1871 census than it would be today, including activities such as extraction and simple processing, construction, utilities, repair and services (most notably blacksmiths). For this paper, we have included the full range of establishments enumerated in 1871. It is easily possible to create more select datasets, to match twentieth-century definitions of manufacturing industry. See G.T. Bloomfield and Elizabeth Bloomfield, Standard Industrial Classifications Applied to Historical Data: The Case of the 1871 Industrial Census, #7 in this series of research reports.

[13] For an explanation of the distinction between primary (processing) manufacturing and secondary (fabricating) manufacturing, see: J.H. Dales, "Estimates of Canadian Manufacturing Output by Markets, 1870-1915", Papers, Canadian Political Science Association, Conference on Statistics 1962 and 1963; and Gilmour, Spatial Evolution, Appendix.

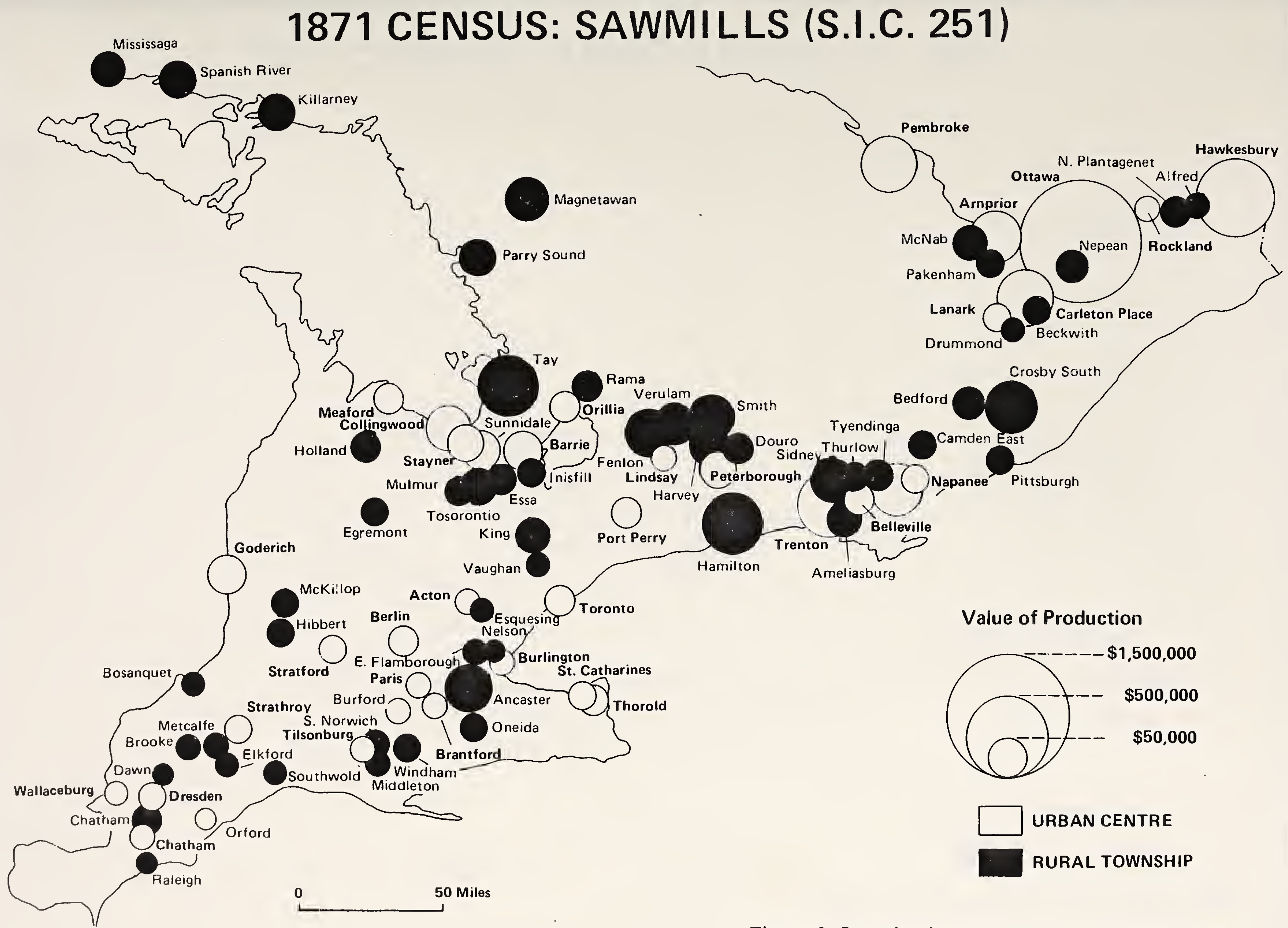

Figure 2: Sawmills in Ontario, 1871, rural and urban

1871 CENSUS: FURNITURE (S.I.C. 261)

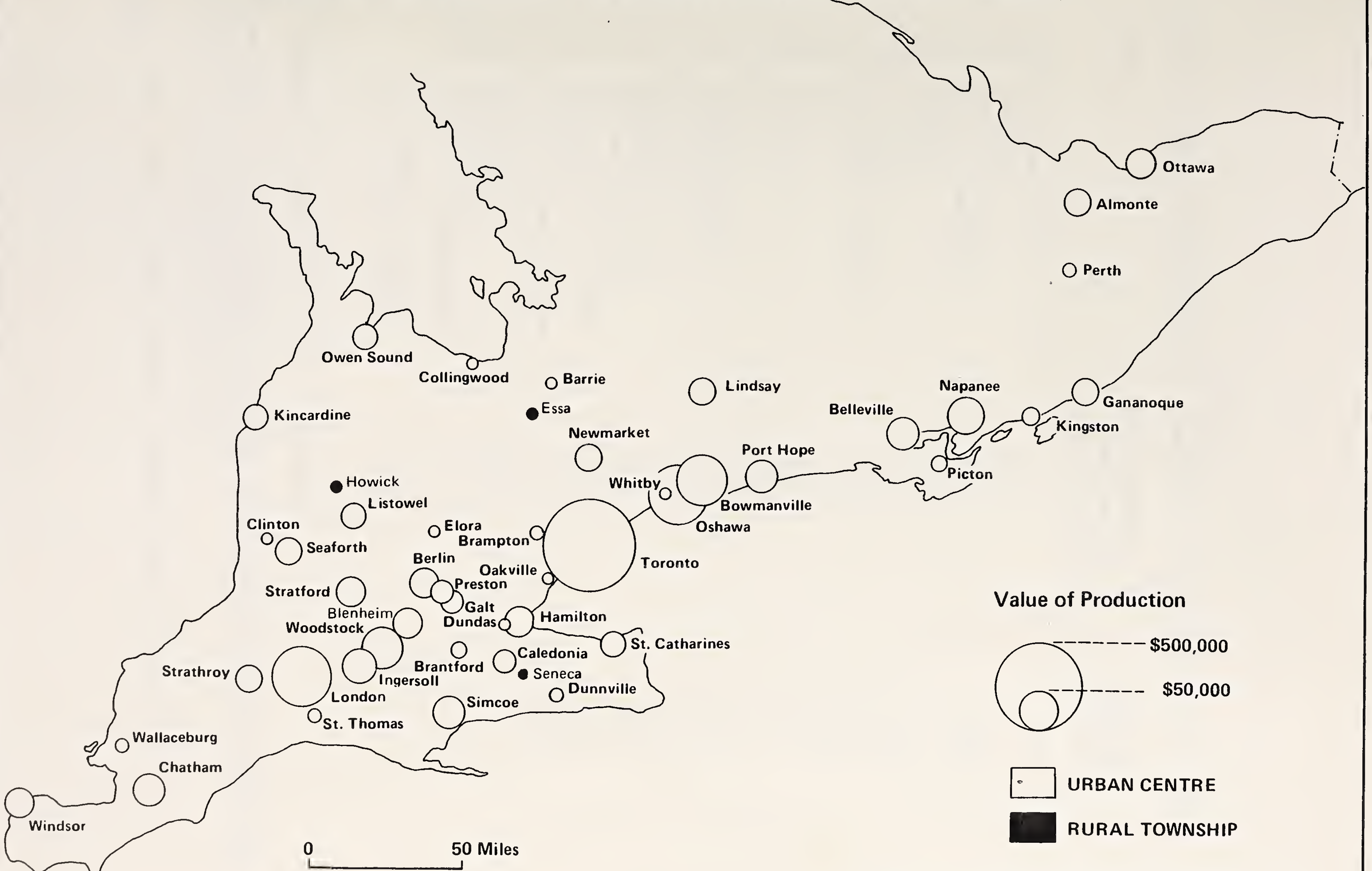

Figure 3: Furniture factories in Ontario, 1871

Table 1

Ontario: Urban concentration of industrial activity by sector, 1871

Sector		Urban Production percent of Total Production	Urban PRODEST Index
1.00	Agrc services	61.9	2.48
2.00	Forestry	*100.0*	
4.00	Mines/Quarries	41.2	0.86
5.01	Food, beverages	56.4	1.48
5.02	Tobacco	*99.5*	
5.04	Leather	*71.6*	1.96
5.05	Textiles	47.2	5.79
5.06	Knitwear, hosiery	61.8	9.98
5.07	Clothing	*90.7*	1.41
5.08	Wood	39.4	2.27
5.09	Furniture	*85.9*	1.74
5.10	Paper	*82.9*	1.27
5.11	Printing	*98.1*	1.11
5.12	Primary metals	*98.6*	1.37
5.13	Metal fabricating	*85.1*	1.39
5.14	Machinery	*84.5*	1.92
5.15	Transportn equpmt	*68.7*	2.26
5.17	Non-metallic mins	57.7	2.75
5.18	Fuels (oil refining)	*78.8*	1.10
5.19	Chemicals	*75.9*	2.50
5.20	Miscell. manufactures	*95.2*	1.28
6.00	Construction	*85.4*	1.28
7.00	Utilities	*100.0*	
8.00	Repair/trade	*67.3*	1.59
10.00	Services (blacksmiths)	29.2	1.67
	ALL INDUSTRY GROUPS	64.2	2.02

NOTES:

1. Calculated from the final CANIND71 database.

2. Urban PRODEST Index derived by dividing the average production per urban establishment in each industrial sector by the average production value for all Ontario establishments in that sector.

3. Percentages above the mean for all industry groups are printed in italics.

were more productive than rural units in every sector except mining and quarries. If all industry groups are considered together, urban firms were twice as productive as the norm. Urban saw mills, textile mills, lime kilns, machinery and chemical works and transportation equipment businesses were especially more productive than rural units of the same industry group.

2 STRUCTURE AND DISTRIBUTION OF INDUSTRY IN URBAN ONTARIO

How was industrial activity distributed through Ontario? To what extent was it concentrated in the largest cities and towns? How much did industry matter to particular urban centres?

Various techniques may be applied to the data to address these questions. Table 2 summarizes the distribution of industrial capital, employment and production through the various size-classes of urban centre. In Size-Class 6, Toronto (56,092) was the only city with over 50,000 people, followed by Hamilton (26,716). Ottawa (21,545), London (15,816), and Kingston (12,407) were the other urban centres with more than 10,000 and are grouped in Size-Class 5. Towns and cities with between 5,000 and 10,000 population, in Size-Class 4, were Brantford, St. Catharines, Guelph, Belleville, Chatham, Port Hope and Brockville. Towns in Size-Class 3 ranged from Peterborough, Cobourg, Stratford and Windsor with between 4,000 and 5,000 population down to Petrolia, Paris and Prescott with under 2,700 population. Size-Classes 1 and 2 each included a large assortment of smaller urban centres varying greatly in industrial significance. Summary details for all urban centres are given in Appendix A-4.

Table 2

Ontario: shares of employment, capital and production: rural and urban, and by size-class of urban place in 1871

Size-Class (population)	N	Estab %	Capital %	Employment %	Production %	Added Value %
1 <1000	51	4.7	3.6	4.3	5.0	5.7
2 1000-2500	61	9.6	11.2	12.4	14.2	14.5
3 2500-4999	24	7.1	10.5	11.1	12.0	12.3
4 5000-9999	7	3.5	6.2	7.2	8.0	7.7
5 10000-24999	3	2.9	7.8	7.2	7.7	7.4
6 >25000	2	4.1	27.1	17.2	17.6	20.0
Total urban	148	31.9	66.5	59.3	64.5	67.6
Rural		68.1	33.5	40.7	35.5	32.4

Industrial activity was far more important to some urban communities than to others. Some were veritable "hives of industry", a phrase used with pride by various Ontario towns and villages in the later nineteenth century. One simple measure of the significance of industry to a community is the percentage of the total population of a city, town or village that was employed in industrial activity. For all 148 centres in 1871, the mean percentage of the Ontario urban population employed in industry was 14.7, but this value ranged

widely in every size-class, but especially among the smaller urban centres (Table 3).[14]

Table 3

Percentage of total population in industrial employment by size-class of urban place, 1871

Size-Class	Percent Town's Population Employed in Industry						
(Population)	0-4.9	5-9.9	10-14.9	15-19.9	20-24.9	>25	TOTAL
1 <1000	6	19	13	6	2	5	51
2 1000-2499	5	16	23	8	4	5	61
3 2500-4999		6	12	3	3		24
4 5000-9999			3	4			7
5 10000-2499			3				3
6 >25000				1	1		2
Totals	11	41	54	22	10	10	148

In a handful of towns, more than three in every ten of the population worked in factories, mills or craftshops. The highest percentages were in Deseronto, Merritton, Hespeler, Portsmouth and Rockland, most of which had populations of 1,000 or less in 1871. But three slightly larger villages in eastern Ontario, Almonte, Carleton Place and Smiths Falls, which had populations between 1,150 and 2,100, were highly industrialized with at least one in every four of their people employed in industry. At least one in every five of the people of the somewhat larger towns of Oshawa, Dundas and Galt worked in industrial establishments. Among the larger urban centres, St Catharines, Brockville, Guelph, Peterborough, Ingersoll and Brantford relied more on industrial activity than Belleville, Chatham, Port Hope, Cobourg, Lindsay and Woodstock. At the top of the urban hierarchy, Toronto (18.9) and especially Hamilton (21.6) had higher percentages than Ottawa (14.8), London (14.5) or Kingston (10.7). Extremely low percentages, below 6 per cent, can be noted for towns such as Fort Erie, Niagara, Windsor and Amherstburg, where transport functions were important. For full details, see Appendix A-6.

How evenly were the various major classes of industrial activity distributed through the urban system? Did problems of transportation and distribution mean that every locality had its own producers? To what extent had local areas of specialization in particular manufactures developed by 1871?

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[14] In their analysis of specialized industrial cities in the United States, Perksy and Moses used the very similar criterion of 15 per cent of the city population employed in manufacturing, together with a concentration of at least 25 per cent of industrial workers in a single industry. J. Perksy and R. Moses, "Specialized Industrial Cities of the United States, 1860-1930", Journal of Historical Geography 10 (1984): 37-51.

Table 4

Ontario: Urban shares of industrial activity by sector in classes of urban place and in rural Ontario, 1871

Sector		Large Urban	Medium Urban	Small Urban	Proto Urban	Rural
1.00	Agrc services			61.9		38.1
2.00	Forestry		100.0			
4.00	Mines/Quarries		41.2			58.8
5.01	Food, beverages	18.5	8.6	24.1	5.2	43.6
5.02	Tobacco	81.4	4.8	13.5		0.5
5.04	Leather	30.2	5.7	32.3	3.4	28.4
5.05	Textiles	12.2	1.2	27.9	5.9	52.8
5.06	Knitwear, hosiery	13.6	0.6	47.6		38.2
5.07	Clothing	48.5	11.7	29.1	1.4	9.3
5.08	Wood	16.2	3.1	19.6	0.5	60.6
5.09	Furniture	37.8	6.0	40.9	0.2	15.1
5.10	Paper	29.9	-	26.4	26.6	17.1
5.11	Printing	76.4	4.8	16.2	0.7	1.9
5.12	Primary metals	81.3	3.4	11.9	2.2	1.4
5.13	Metal fabricating	42.2	13.0	27.9	2.0	14.9
5.14	Machinery	32.2	12.0	37.7	2.6	15.5
5.15	Transportn equpmt	17.8	14.3	31.5	5.1	31.3
5.17	Non-metallic mins	29.2	8.5	19.4	0.6	42.3
5.18	Fuels (oil refining)	8.5	0.2	15.6	54.5	21.2
5.19	Chemicals	41.7	11.2	15.4	7.6	24.1
5.20	Miscell. manufactures	74.4	11.7	8.9	0.2	4.8
6.00	Construction	50.1	10.4	24.9		14.6
7.00	Utilities	85.9	8.9	5.2		
8.00	Repair/trade	23.7	7.9	34.5	1.2	32.7
10.00	Services (blacksmiths)	7.0	2.1	16.8	3.3	70.8
	ALL INDUSTRY GROUPS	25.2	7.4	26.2	5.4	35.8
	POPULATION SHARES	8.2	2.8	10.8	2.1	76.1

NOTES:

1. Calculated from final CANIND71 database.
2. The "large urban" class groups the five urban centres with at least 10,000 population; "medium urban" those with 5,000 to 10,000; "small urban" places with under 5000; "proto-urban" the 38 places that were not yet incorporated in 1871; "rural" the remainder.

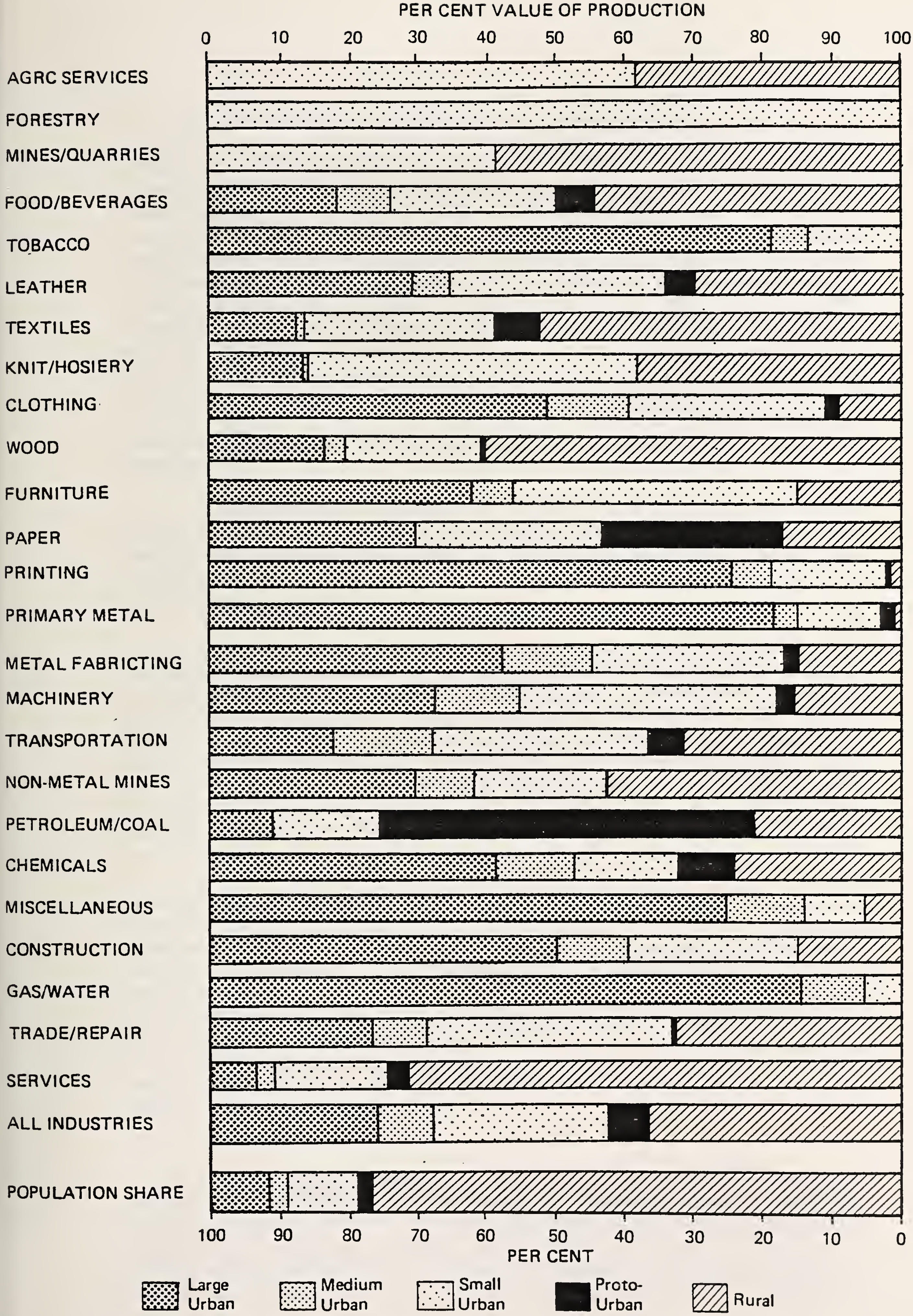

Figure 4: Urban shares of industrial activity by sector in classes of urban place and in rural Ontario, 1871

Table 4 and Figure 4 show the shares of each industrial sector's value of output in large, medium and small urban places, in proto-urban centres and rural areas. Certain industry groups were heavily concentrated in the five cities of Toronto, Hamilton, Ottawa, London and Kingston. Notably higher shares of utilities, tobacco, primary metals, printing and miscellaneous manufactures were located in these larger urban places, at three times the level of general industrial production. Construction, clothing, metal fabricating and chemicals were also concentrated in the five cities, but to a lesser degree. Industry groups over-represented in the seven towns with 5,000 to 10,000 population were transportation equipment, metal fabricating, machinery, clothing, miscellaneous manufactures and chemicals. In the smaller urban centres, a disparate group of 98 towns and villages with under 5,000 population, only knitwear/hosiery, furniture and machinery were somewhat over-represented. The 38 proto-urban places had phenomenal concentrations of petroleum refining (reflecting London East) and paper-making (reflecting Merritton).

In order to be able to compare the industrial structures of different-sized places in Ontario, we used various statistical measures such as quotients and coefficients. In interpreting these, it should be realized that a notably high value may reflect the presence of a single large or middle-sized enterprise in a fairly small urban centre.

As one measure of local industrial concentration and specializations, we calculated **location quotients** for all major industrial groups in all towns.[15] A quotient of 1.0 indicates that an industrial group is represented in a town (or group of towns) in the same proportion as industry in general. A quotient of under 1.0 means under-representation of that industry group; a quotient of above 1.0 is evidence of relative concentration of a particular industry group and a quotient above 5.0 of remarkable specialization. Of the 57 cities, towns and villages with at least 200 industrial workers in 1871, 25 had at least one location quotient over 5.0. Examples of remarkable location quotients, based on industrial production of individual towns in 1871, include:

Food (distilling): Walkerville 14.5.
Tobacco: Windsor 10.1, Berlin 10.3.
Textiles: Hespeler 16.5, Embro 16.4, Almonte 15.6, Lanark 9.7, Elmira 9.4, Merritton 8.1, Preston 7.6, New Edinburgh 7.2, Campbellford 6.2.
Knitting: Paris 51.2.
Wood: Rockland 9.8, Hawkesbury 8.3, Trenton 7.1, Deseronto 7.0, Oil Springs 6.5, Carleton Place 6.5. Dresden 6.0.
Furniture: Bowmanville 8.3, Oshawa 5.7.
Paper: Georgetown 43.9, Merritton 38.5, Cornwall 11.0.
Primary Metals: Smiths Falls 7.6.

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[15] For the classic explanations of the location quotient and urbanization quotient, see: P. Sargant Florence, Investment, Location and Size of Plant: A Realistic Enquiry into the Structure of British and American Industries (Cambridge: Cambridge University Press, 1948): 41, 60-66; P.S. Florence et al.,"Measures of Industrial Distribution", in Industrial Location and National Resources (Washington: National Resources Planning Board, 1942): 105-124.

Metal Fabricating: Gananoque 14.7.
Machinery: Mitchell 8.1, Brampton 7.2, Aurora 7.1, Newcastle 6.3, Oshawa 5.5.
Transportation Equipment: Port Dalhousie 11.9, Bath 7.3, Oakville 6.6, Gananoque 6.1, Kingston 6.0, Cobourg 5.7.
Petroleum Refining: London East 111.5, Petrolia 76.7, Sarnia 40.6, Oil Springs 22.3, Merritton 19.8, Bothwell 7.6.
Chemicals: London East 12.5, Cayuga 9.4, Windsor 6.8, Kingston 5.5.

Location quotients may also be generalized into **urbanization quotients**, measuring the degree to which a particular industry was localized in the various size-classes of urban centre (Appendix A-5). The quotient values are less extreme for groups of towns than for individual urban centres. If we consider only quotients over 2.0 (meaning activity at twice the normal level), urban centres in Size-Class 1 with under 1,000 population were notable for textiles (chiefly woollen and carding mills) and for services (mainly blacksmiths). Urban places in Size-Class 2 were significant for textile and especially paper mills. The apparent strength of knitting and fuel industries in the Size-Class 3 really reflects the smallness of these industry groups and their remarkable specializations in Paris (knitting mills) and London East and Petrolia (oil refineries), but the quotient of 1.846 for furniture represents more general concentration in towns of this size. Size-Classes 4 and 5 had quite balanced industrial structures with no urbanization quotients above 2.0, but Size-Class 4 had the highest quotients of any size-class for food, primary metals, metal fabricating, machinery, transportation equipment and chemicals, while Size-Class 5 had the highest quotient for printing. In Size-Class 6, consisting of Toronto and Hamilton, there were quotients of above 2.0 for tobacco, miscellaneous manufacturing and utilities, as well as the highest quotients of any size-class for leather (including boots and shoes), clothing and construction.

Gini coefficients can provide single values to specify the degree of industrial specialization or diversification of particular towns, or the degree of diversification or dispersal of particular industry groups. Using the Gini formula[16], the **index of distinctiveness** is derived by summing the differences between the industrial structure of a town or region and the industrial structure of the whole nation or other universe (in this case, the Ontario urban system) and dividing by 2. A Gini of 0 means that the town's structure is identical to that of the nation or universe, while a relatively high Gini signifies specialization. The **index of diversification** calculates how evenly a town's (or region's) industrial activity is spread across the possible number of product types. In both cases, a Gini of 0 would mean that the town's industrial mix is identical to the standard for the regional system, while a Gini over 50 would indicate that it is different as it could be. Table 5 presents

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[16] A useful recent exposition of the application of Gini coefficients to the study of regional industrial structures is: Anthony G. Hoare, "What Do They Make, Where, and Does It Matter Any More? Regional Industrial Structures in Britain since the Great War", Geography 71 (1986): 289-304. See also Alun E. Joseph, "On the Interpretation of the Coefficient of Localization", Professional Geographer 34,(1982): 443-446.

the two indices for Ontario towns and cities with industrial workforces of at least 400.

Table 5

Gini coefficients of industrial distinctiveness and diversification in urban places with >400 industrial workers in 1871

CITY/TOWN	INDEX OF DISTINCTIVENESS	INDEX OF DIVERSIFICATION
Toronto	0.27	2.17
Hamilton	0.54	6.52
Ottawa	4.50	10.87
London	0.97	10.87
St.Catharines	0.81	8.70
Kingston	0.81	8.70
Brantford	3.40	13.04
Guelph	0.71	6.52
Belleville	1.61	10.87
Galt	2.22	13.04
Peterborough	3.80	15.22
Oshawa	8.65	23.91
Chatham	0.93	10.87
Brockville	4.09	13.04
Dundas	2.80	17.39
Ingersoll	3.11	15.22
Port Hope	1.46	10.87
Almonte	4.92	19.57
Stratford	5.49	17.39
Cobourg	5.61	17.39
Woodstock	1.09	13.04
Lindsay	5.92	17.39
Strathroy	1.58	13.04
Merritton	32.31	34.78
Gananoque	7.22	19.57
Bowmanville	9.93	23.91
Barrie	2.55	17.39
Paris	11.55	19.57

When the index of distinctiveness is graphed against size of workforce (as in Figure 5), the larger centres are generally seen to be less distinctive or specialized than some smaller places, though Ottawa and Brantford stand out as exceptions. There is greater variety among the middle-sized centres, from the low Gini values of Belleville, Chatham, Port Hope, Woodstock and Strathroy, to the more distinctive industrial mix in towns such as Oshawa, Gananoque, Bowmanville, Paris and, most notably, Merritton. The range of indices is even wider among smaller urban places.

Gini coefficients may also be calculated to describe the geographical distribution of particular industry groups, to determine whether each was **distinctive** when compared with industry in general, and the extent to which

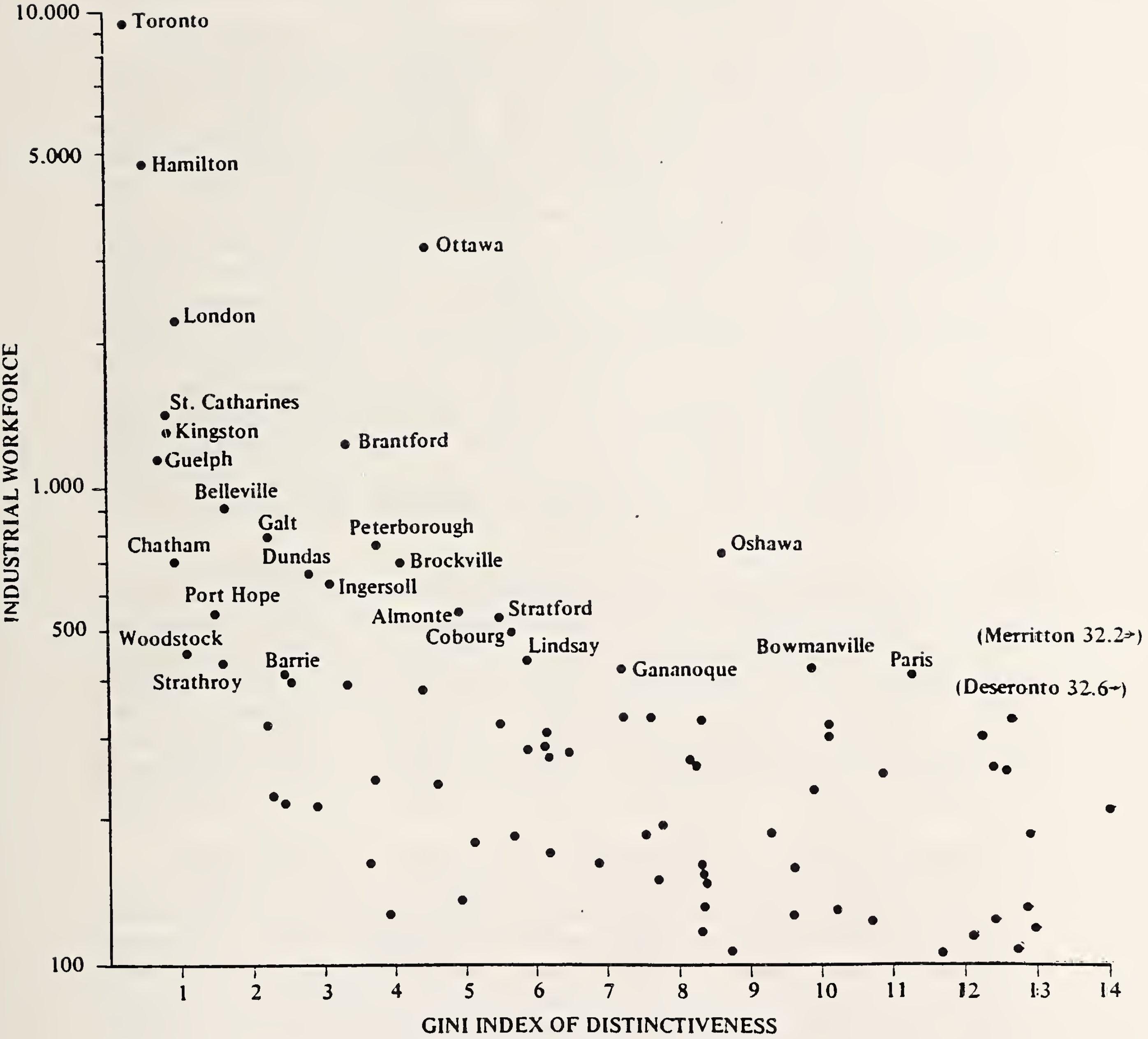

Figure 5: **Industrial Specialization: Gini coefficients for Ontario towns with at least 100 industrial workers in 1871.** Towns with industrial workforces of 400 or more are named. Seven other towns with 100-200 workers had indices above 15.

this spread was dispersed evenly through the region, nation or urban system. The least distinctive and most ubiquitous industry groups in Ontario in 1871 were services (0.40), wood processing (0.61), food (0.76), leather (0.77), transportation equipment (1.11), and clothing (1.66); these were also the most

evenly dispersed through the Ontario urban system. The most distinctive and least evenly dispersed were the fairly small industry groups of fuels (38.61), knitting (38.49), paper (31.92), tobacco (24.59) and utilities (24.46).

Case-studies of communities with high indices of distinctiveness reveal the presence of leading enterprises or clusters of firms in particular industrial sectors. Oshawa, for example, had over 60 per cent of its 732 industrial workers employed by two firms, one making steam engines, boilers and farm machinery and the other furniture. Gananoque was distinctive for several firms in metal fabricating, machinery and transportation equipment: one making rivets and castings; another nails and hinges; three manufacturing tools, including shovels, forks and files; two making agricultural implements and three making parts for carriages and wagons. The village of Smiths Falls had two notable foundry enterprises making agricultural implements, as did the town of Ingersoll, while Mitchell, Newcastle, Aurora and Brampton were each dominated by a single enterprise in this sector. Several places were distinctive for their textile mills, including Almonte with five woolen mills and Hespeler with three, while Merritton had two cotton mills and a paper mill. Sawmills dominated other urban centres, from the six employing at least 50 workers and producing $100,000 each in Ottawa, to the single, very large mills in smaller communities such as Carleton Place, Deseronto, Hawkesbury, Port Perry and Trenton.

The quantitative analysis reported above does not support any general stereotype of self-sufficient communities, each producing goods for its own local needs in geographically limited areas without competition. Clearly, it was possible for local entrepreneurs in Ontario by 1871 to have developed some significant local specialization in particular product lines, and to supply more than their immediate hinterlands. But how far had the process of spatial concentration proceeded? How concentrated were various classes of industry in the largest cities of Ontario in 1871? To what extent may we explain the distribution of different types of industry in terms of metropolitan dominance?

As already noted, Toronto and Hamilton had more than their shares of total industrial capital, employment and production on a per capita basis, when compared with other size-classes of urban centre in Ontario. Certain industry groups were clearly concentrated in these cities, especially those for which a large local market and optimal access by rail to other markets would be important. Both cities had more than their per capita shares of tobacco, clothing, chemicals, miscellaneous manufactures and construction, while Toronto was notable for leather goods (boots and shoes), knitting, furniture, paper, printing and metal fabricating, and Hamilton for primary metals, machinery, transportation equipment and non-metallic minerals.

Toronto and Hamilton seem to have been complementary in their industrial strengths, in the manner suggested above for other neighbouring centres in a regional system. Both were highly industrialized, with well above average percentages of their populations employed in industry. But Hamilton had a higher percentage as well as a distinctive specialization in primary metals, machinery and engineering, while Toronto had more substantial central-place and administrative functions and greater strength in the manufacture of consumer durable and semi-durable products. Toronto certainly exhibited metropolitan dominance, with nearly 13 per cent of the total

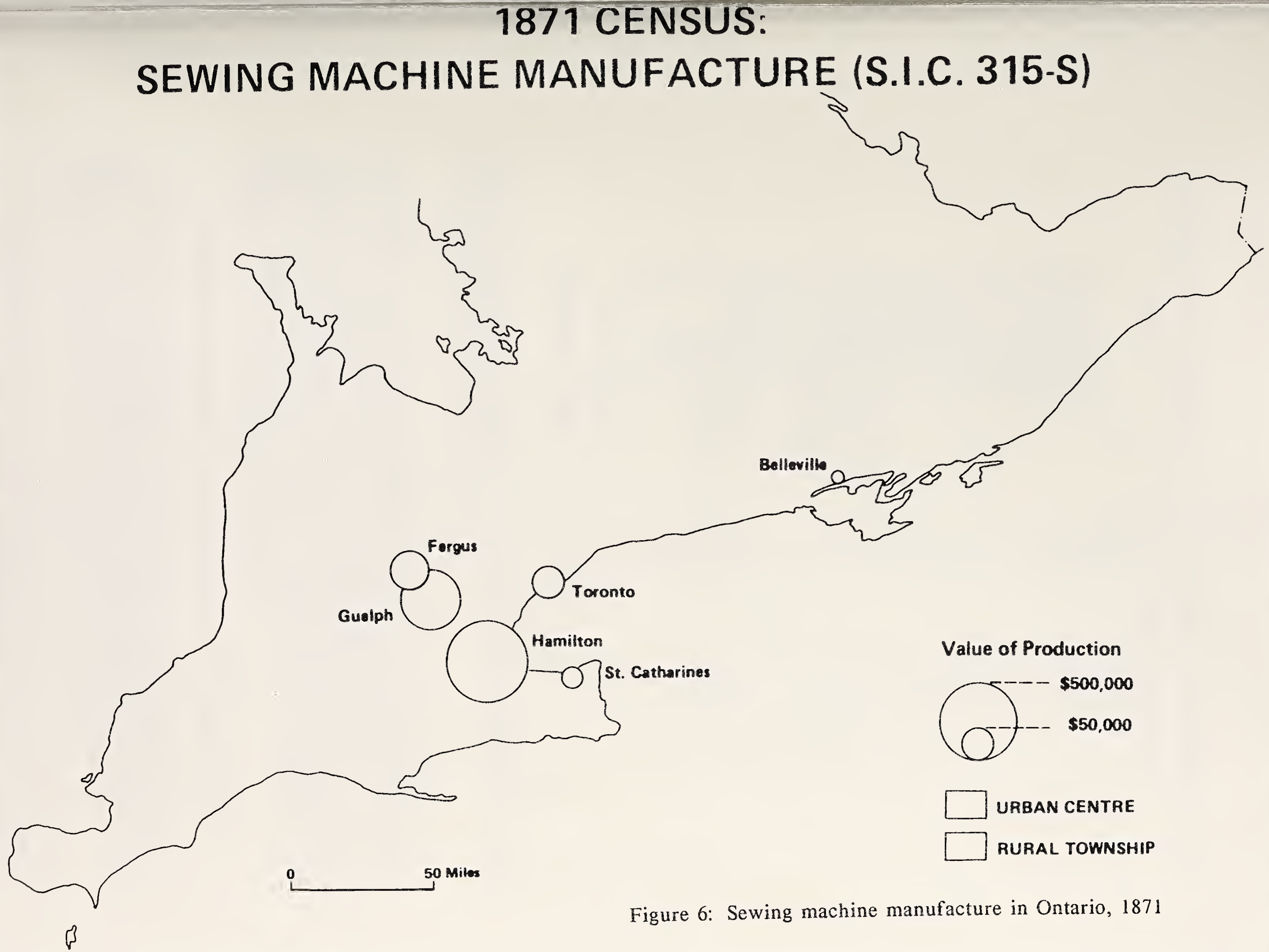

Figure 6: Sewing machine manufacture in Ontario, 1871

Table 6

Concentration of industry by sector in Toronto and Hamilton, 1871

Sector		% Total Ontario Employment	
		Toronto	Hamilton
5.01	Food etc	9.6	3.2
5.02	Tobacco	51.3	24.5
5.04	Leather	17.1	4.5
5.05	Textiles	0.3	0.7
5.06	Knitting	14.0	-
5.07	Clothing	22.3	10.8
5.08	Wood	4.0	0.6
5.09	Furniture	17.8	3.6
5.10	Paper	18.3	1.7
5.11	Printing	37.7	5.7
5.12	Primary metal	27.2	33.1
5.13	Metal fabrictg	19.7	9.5
5.14	Machinery	8.4	12.9
5.15	Transportation	8.9	12.5
5.17	Non-met.mins	4.4	11.7
5.18	Fuels	1.8	-
5.19	Chemicals	9.2	4.9
5.20	Miscell.mfg	34.4	14.3
6	Construction	11.7	10.2
7	Utilities	44.2	8.7
8	Trade	9.8	
10	Services	1.5	0.9
ALL INDUSTRIES		11.1	6.1
POPULATION SHARE		3.5	1.6

industrial production of Ontario in 1871. But it should be noted that Montreal was far more dominant in Quebec, accounting for nearly 43 per cent of that province's industrial production in 1871.[17]

Toronto and Hamilton, separately and together, clearly accounted for a large overall share of Ontario's industrial activity. Yet there was still scope in 1871 for particular industries to be distinctively located in other than metropolitan or large urban centres. The distribution of sewing machine manufacturing, for example, illustrates its significance in such non-metropolitan centres as Guelph and Fergus (Figure 6). It also shows the linkages between different centres in the urban system, in that the plant in Fergus was a subsidiary branch of a parent firm in Hamilton.

4 TYPOLOGY OF INDUSTRIAL ACTIVITY IN ONTARIO TOWNS

How may we classify Ontario urban centres by their industrial functions? While each place was unique in its specific combination of enterprises in relation to other local circumstances, the industrial qualities of various urban centres may be generalized in order to group places of broadly similar

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[17] Calculated from the CANIND71 database for the province of Quebec.

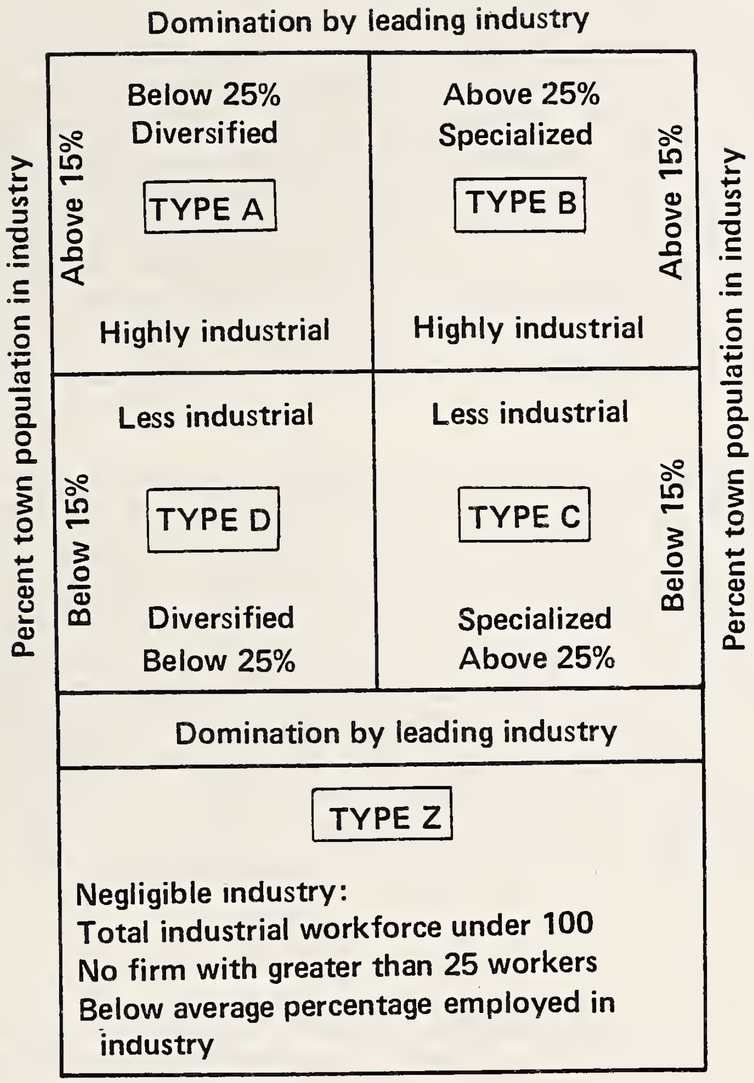
Domination by leading industry
Below 25%
Diversified
TYPE A
Highly industrial
Above 25%
Specialized
TYPE B
Highly industrial
Above 15%
Above 15%
Less industrial
TYPE D
Diversified
Below 25%
Less industrial
TYPE C
Specialized
Above 25%
Below 15%
Below 15%
Percent town population in industry
Percent town population in industry
Domination by leading industry
TYPE Z
Negligible industry:
Total industrial workforce under 100
No firm with greater than 25 workers
Below average percentage employed in industry

Figure 7: **Typology of Industrial Activity in Ontario Towns, 1871**

character. As a start, we have used the criteria of degree of industrialization of local employment (distinguishing urban places which had more or less than the regional mean of about 15 per cent of population employed in industry), and degree of domination of a community by a single industry (distinguishing those places with more than 25 per cent of industrial employment in a single leading industry group).[18]

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[18] This classification is based on the model of Perksy and Moses for the United States ("Specialized Industrial Cities"), and complements Spelt's classification, based on central-place functions, for the south-central region of Ontario in the later nineteenth century (Urban Development). The figure of 15 per cent, used to distinguish industrialized from less industrialized towns was slightly modified in this report to match the actual mean proportion of 14.7 per cent of Ontario's urban population employed in industrial work in 1871. As a result, Ottawa, with an industrial proportion of 14.8 per cent was grouped with those towns where the proportion was higher than 15 per cent.

Such a classification allows for four main types of urban centre based on their industrial activity (Figure 7). When the typology is applied to the industrial data for Ontario urban centres in 1871, we can group several places in each of the types. Type A places (including Toronto, Hamilton, St. Catharines and Peterborough) combined above-average employment in industry with a diversified industrial structure and no dominant industry or enterprise. Type B places (Ottawa, Brantford, Guelph, Brockville, Galt, Oshawa, Ingersoll and Dundas being the largest examples) were both highly industrialized and specialized. Type C places combined below-average industrial employment with specialization in a particular industry: towns in this class with over 300 industrial workers were Port Hope, Barrie, Bowmanville, St Marys, Goderich, Collingwood, Picton and Berlin.

Type D centres were neither highly industrialized nor specialized. These types may be identified at all levels of the urban hierarchy but the largest were London, Kingston, Belleville, Chatham, Stratford, Cobourg, Lindsay, Woodstock and Strathroy. We also distinguished 49 smaller centres, which had negligible industrial functions, as Type Z. These had below-average industrial percentages employed, no dominant industry, industrial workforces of under 100, no firms employing more than 25 workers, and were all in Size-Classes 1 and 2. The classification of Ontario urban places according to this scheme is summarized in Table 7 and data for individual urban places are presented in Appendices A-6 and A-7 in more detail. A more elaborate classification might take account also of location quotients, indices of specialization and diversification, and the interlinkages of leading sectors and firms.[19]

Table 7

Classification of Ontario urban places on basis of industrial functions, 1871

Size-Class (Population)	Type A	Type B	Type C	Type D	Type Z	Total
1 <1000	6	7	1	3	34	51
2 1000-2499	2	15	9	21	14	61
3 2500-4999	1	5	6	12		24
4 5000-9999	1	3	1	2		7
5 10000-24999		1		2		3
6 >25000	2					2
Total	12	31	17	40	48	148

[19] Such a more elaborate typology would draw upon the concepts and measures of I. Adelman and C.T. Morris, "Patterns of Industrialization in the Nineteenth and Early Twentieth Centuries: A Cross-Sectional Quantitative Study", in Research in Economic History: A Research Annual, edited by Paul Uselding, 5 (1980): 1-84. See also: D.R. Meyer, "Emergence of the American Manufacturing Belt: An Interpretation", Journal of Historical Geography 9 (1983): 145-174.

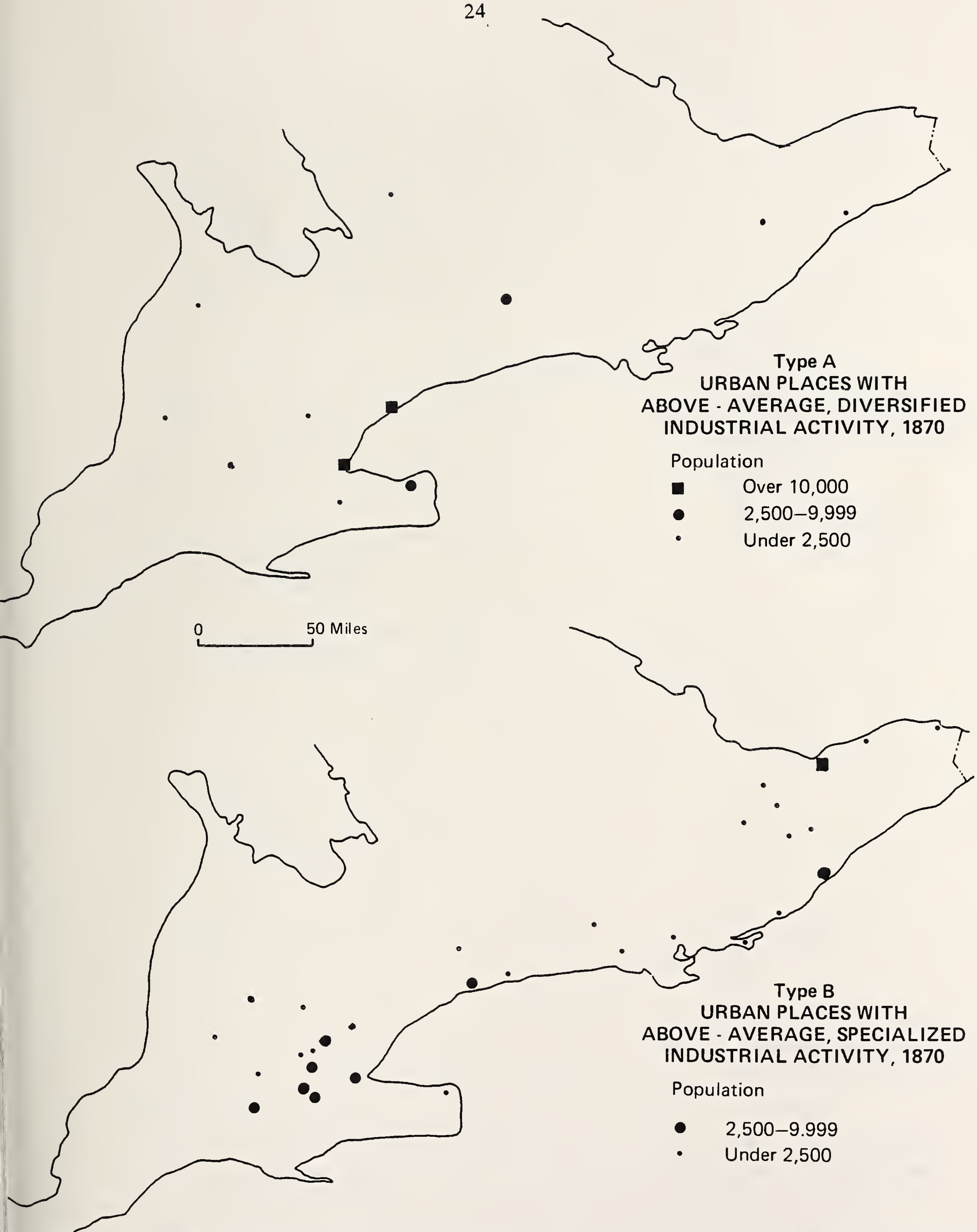

Figure 8: Type A: Urban places with above-average diversified industrial activity, 1871;
Type B: Urban places with above-average specialized industrial activity, 1871

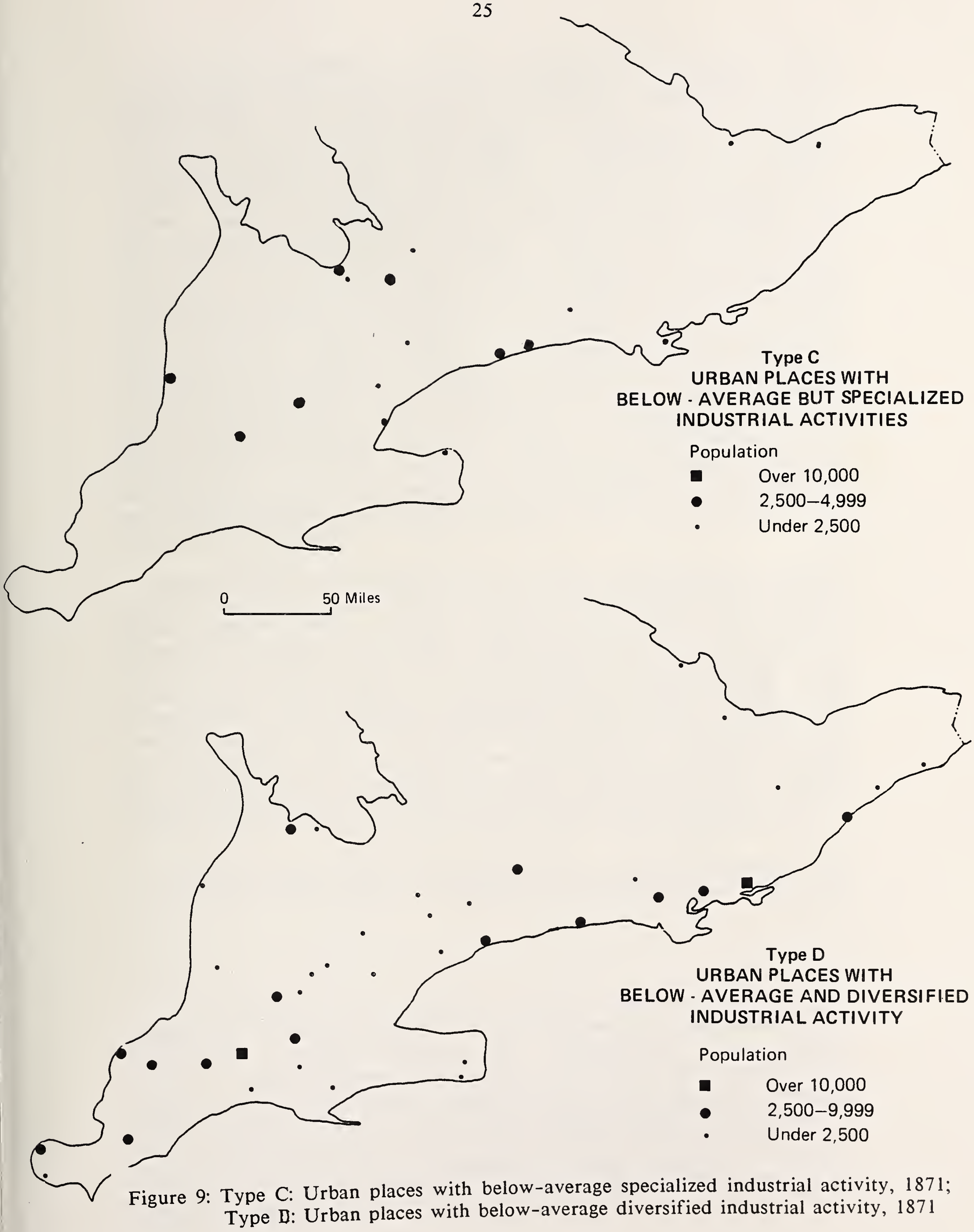

Figure 9: Type C: Urban places with below-average specialized industrial activity, 1871;
Type D: Urban places with below-average diversified industrial activity, 1871

The 48 towns identified in Types B and C because of their specialization in a particular industry are listed also in Appendix A-7 according to that industrial sector. The largest group of such towns - Ottawa, Port Perry, Carleton Place, Hawkesbury, Trenton, Deseronto, Rockland, Barrie, Goderich, Collingwood, Arnprior, Orillia and Stayner - specialized in the primary processing of wood products, each being dominated by one or more large sawmills. Eight towns specialized in textiles - woolens in Almonte, Preston, Hespeler, Lanark, Campbellford and New Edinburgh, cottons in Merritton and flax in Listowel, while Paris was dominated by hosiery mills. Single cases of specialization were Walkerville in distilling, Georgetown in leather tanning, London East in petroleum refining, Garden Island in raft-building and Portsmouth (the Kingston Penitentiary) in stone masonry construction. Perhaps more remarkable was the specialization of significant numbers of towns in fabricated forms of industrial activity. Eleven small and middle-sized towns specialized in the manufacture of machinery of all kinds - Galt and Oshawa in boilers and steam engines, Dundas, Ingersoll, Smiths Falls, Mitchell, Newcastle, Brampton and Aurora in agricultural machinery, and Guelph and Fergus in the making of sewing machines. Port Hope, St Marys and Picton had measurable specializations in clothing, Bowmanville and Berlin in furniture, and Brockville and Gananoque in metal fabricating. Three towns specialized in the making of transportation equipment, Brantford (railways), Oakville (carriages) and Port Dalhousie (boat-building).[20]

Mapping these data (Figures 8 and 9) reveals some interesting regional patterns, industry being relatively unimportant in much of southwestern Ontario west of London, as well as along the Lake Ontario-St. Lawrence littoral east of Toronto. The pattern supports the concept of a core-periphery contrast even at this date, with a concentration of above-average values around the head of Lake Ontario, notably in Toronto and Hamilton-Dundas, and extending east to St Catharines and Merritton at the Niagara frontier, and west to Brantford, Paris, Galt, Hespeler, Guelph and Fergus in the middle and upper Grand River valley, and to Oshawa and Port Perry to the east. There was a smaller regional concentration of highly industrialized towns in eastern Ontario from Gananoque and Brockville on the St Lawrence through the Rideau corridor to include Almonte, Carleton Place, Smiths Falls, and Merrickville.

Some sub-regions show considerable variety among neighbouring urban centres, which may perhaps be explained by some local specialization and

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[20] The design of the CANIND71 database permits one to relate the aggregations of data for industry groups and sectors to the identity and charateristics of specific enterprises. For a demonstration of this potential, for the 60 largest industrial businesses in Ontario in 1871, see Elizabeth Bloomfield and G.T. Bloomfield, Industrial Leaders: The Largest Manufacturing Firms in Ontario, 1871, #8 in this series of research reports. The relevance of the 1871 database to community studies, with special reference to Hespeler, Carleton Place and Oshawa, is discussed in Elizabeth Bloomfield, "Using the 1871 Census Manuscript Schedules: A Machine-Readable Source for Social Historians", Histoire sociale 19 (1986): 427-441.

complementarity of urban functions.[21] With St Catharines and Merritton highly industrialized, for example, adjoining villages on the Niagara frontier showed remarkably low values. Whitby and Oshawa, located close together in Ontario County east of Toronto, had contrasting and complementary urban economic functions, Oshawa the most highly industrialized town in its size-class, while Whitby as the county town had administrative and judicial functions.

5 EARLY INDUSTRIAL CAPITALISM AND URBAN WORK ENVIRONMENTS

The 1871 database allows us to examine the organization of industrial capitalism at a time of transition from artisanal craftshops to factories using machinery and integrated work processes. The earlier interpretation of the industrialization process, based on the "textile paradigm" in which the craftsman was confronted and abruptly displaced by the modern factory, has been modulated into an awareness of variable paths of development followed by different industrial sectors.[22]

How well do the Ontario data support the concept of "concurrent phases of capitalist growth" in which factories, manufactories and craftshops co-existed? Research into this question has potential interest for business,

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[21] The possibility of highly specialized and interdependent manufacturing cities developing in close proximity in Central Canada was noted by J.W. Maxwell, "The Functional Classification of Canadian Cities", Geographical Bulletin 7 (1965): 79-104.

[22] For discussion of these ideas, including their implications for our understanding of the process of industrialization and the work experience of labour in various phases and settings, see: R. Samuel, "The Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain", History Workshop Journal 3 (1977): 6-72; H.G. Gutman, "Work, Culture and Society in Industrializing America, 1815-1919", American Historical Review 78 (1973): 531-588; I. McKay, "Capital and Labour in the Halifax Baking and Confectionery Industry during the Last Half of the Nineteenth Century", Labour/Le Travailleur 3 (1978): 63-70; G.S. Kealey, Toronto Workers Respond to Industrial Capitalism; and B. Laurie and M. Schmitz, "Manufacture and Productivity: The Making of an Industrial Base, Philadelphia, 1850-1880", in Hershberg, ed. Philadelphia: Work, Space, Family, and Group Experience in the Nineteenth Century, (New York, 1981): 43-92. Laurie and Schmitz also used their Philadelphia data to test Alfred Chandler's theory that scale and mechanization did not necessarily lead to economies of scale, and that scale might indeed be a liability. The results of their analysis did support Chandler in showing that the large factory was not the efficiency leader in the mid- to late-nineteenth century (Laurie and Schmitz, "Manufacture and Productivity", 66-88). For analyses of the earlier period, see: J. Atack, "Returns to Scale in Antebellum United States Manufacturing", Explorations in Economic History 14 (1977): 337-359; and K.L. Sokoloff, "Was the Transition from the Artisanal Shop to the Nonmechanized Factory Associated with Gains in Efficiency? Evidence from the U.S. Manufacturing Censuses of 1820 and 1850", Explorations in Economic History 21 (1984): 351-382.

labour, social and urban historians. Were the new, large factories more or less productive than the manufactories and craftshops? Can the variety of work experience in the different sectors be related to the formation of early workers' movements? How were varieties and changes in industrial organization expressed in the social and spatial structure of towns and cities? What can a detailed knowledge of the organizational structure of industry in one year tell us of the evolving process of industrialization up to that point?

The concept of the **work environment**, following the Philadelphia work of Laurie and Schmitz, combines measures of the size of workplace with the extent to which non-manual power was used. Laurie and Schmitz distinguished five types of work environment: **factories** as all powered establishments, **manufactories** as non-powered workplaces with over 25 workers, and **artisanal craftshops** as non-powered units with five or fewer workers. Middle-sized establishments, without power and employing between 6 and 25 workers, they distinguished as **sweatshops**, while acknowledging that these "presented nagging definitional problems". Laurie and Schmitz also identified **outworkers**, who toiled at home under the putting-out system, while admitting the difficulty of distinguishing these from artisans on census manuscript evidence alone.[23]

In adapting a classification designed for the very large city of Philadelphia to a regional system of various-sized urban places, we might quibble with the designation of all powered establishments as "factories", when fewer than 25, and certainly when fewer than 5 workers, were employed. Many of the grist and wood-processing mills in village and small-town Ontario, with their small numbers of workers, should not really be described as factories. It is also misleading for oil refineries and tanneries which used inanimate energy but lacked the work discipline and complex organization connoted by the term "factory". Powered establishments with 25 or fewer workers might usefully be distinguished from the larger factories. Sweatshop and outwork settings present definitional problems in Ontario, too, which can probably not be resolved using the manuscript census source alone.

Before defining work environments for urban Ontario, let us examine separately the factors of establishment size and use of inanimate energy. The average urban industrial business in Ontario was small. More than two-thirds of all urban establishments employed five or fewer workers, and only two per cent employed over 50 workers, though these larger workplaces accounted for nearly one third of all urban industrial workers. Rural industrial units were much smaller, 92 per cent employing five or fewer workers and under eight per

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[23] Laurie and Schmitz, "Manufacture and Productivity", 53-66. In his study of the Halifax baking industry, McKay also used a classification of factories, manufactories and handicraft shops, but defined them in terms of size of workforce and size of output, rather than use of power. In McKay's classification, handicraft bakeries had fewer than five workers; manufactories employed five or more workers, utilized "mechanical improvements to a greater extent", and had "access to steam power" but were chiefly distinguished by a total output of at least $25,000 in 1870. In the context of the baking and confectionery industry, a factory produced at least $100,000 worth of output (McKay, "Capital and Labour", 65-70).

cent of rural workers employed in establishments of over 50 workers. As Table 8 suggests, the mix of different-sized establishments also varied from place to place, the proportion of larger firms being significantly higher in Ontario's largest urban centres. While over half of Hamilton's industrial establishments were small, and only one in twenty employed over 50 workers, these large firms accounted for well over half of all industrial workers in the city. In Toronto, the proportion of all industrial workers employed in large firms was even higher. It is interesting that the proportion of Toronto workers employed in large establishments in 1871 was almost exactly the same as reported for Philadelphia.[24]

Table 8

Industrial firm size in all Ontario urban places, Hamilton, and Toronto, 1871

Firm Size (workers /estab)	Urban Ontario		Hamilton		Toronto	
	Estabs %	Workers %	Estabs %	Workers %	Estabs %	Workers %
1 - 5	68.8	20.9	52.6	8.0	49.7	6.6
6 - 25	25.9	33.4	36.8	24.7	35.7	21.6
26 - 50	3.0	13.1	6.1	12.5	7.3	13.8
> 51	2.0	32.6	4.5	54.6	8.3	58.0
Totals	100.0	100.0	100.0	100.0	100.0	100.0

Only a small minority of industrial establishments, just over one in every five, used inanimate energy in the form of water wheels or steam engines, though these contributed nearly 65 per cent of value of output in Ontario urban centres (Table 9). Steam power outweighed water power in urban industrial production, the output of steam-powered factories being more than twice that of water-powered industries, though water power still predominated in rural areas. When Adna Weber posed the question in 1899, "What now are the economic forces that have caused the massing of people in large communities?", he expected that "the business man's answer would probably be short and trenchant, 'Steam'".[25] The answer to his question is much more complex, but the application of steam power to industrial uses is a very significant factor which deserves more attention. Steam power was especially important in the larger urban centres, contributing 95 per cent of all non-manual power in Toronto and 98 per cent in Hamilton. In some

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[24] Laurie and Schmitz, "Manufacture and Productivity", p. 52. Workers for firms with at least 51 employees made up 58 per cent of Toronto's total workforce, compared with 57.7 per cent of Philadelphia; workers for firms with 26-50 employees made up 13.8 per cent of the total in Toronto, 14.0 per cent in Philadelphia.

[25] Weber, Growth of Cities, 158.

establishments, machinery originally powered by water wheels was boosted by additional steam-power.[26]

Table 9

Types of power used in industrial establishments in Ontario urban places, 1871

Type of Power	% Estabs	% Output	% Workers	% HP
Manual	75.9	34.5	46.2	-
Water wheels	6.1	20.0	11.3	47.7
Steam engines	14.3	41.6	38.9	46.7
Water/Steam	0.6	2.9	1.7	4.7
Horse	3.1	1.0	1.8	0.9
Totals	100.0	100.0	100.0	100.0

Scale of operation expressed in the number of workers per establishment and the extent of powered mechanization have been used as the bases for the typology of work environments illustrated in Figure 9 and used in Tables 10, 11 and 12. With its rich detail on the size and scale of operation and use of power of individual firms, our database contributes good evidence of the concurrent co-existence of very different modes and scales of operation, between and within industrial sectors. Artisanal craftshops, manufactories and factories can be identified in virtually all industry groups in Table 10, but in widely varying proportions.

Ontario's woolen, cotton and paper mills clearly conform to the "textile paradigm". As with primary metals and machinery, each of these industry-groups had over 90 per cent of its workers in powered establishments, and at least 60 per cent in factories of over 26 workers. Wood-processing (mainly saw and shingle mills) and paper mills had proportions which were nearly as high. The dominance of large, powered establishments in these sectors may be contrasted with the mix of non-powered work settings in the clothing industry

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[26] For a preliminary analysis of the use of inanimate power in Ontario industry in 1871, see G.T. Bloomfield and Elizabeth Bloomfield, Water Wheels and Steam Engines: Powered Establishments in Ontario, #2 in this series of research reports. The CANIND71 database, which preserves virtually the only systematic data on industrial power in nineteenth-century Canada, will eventually help in the publication of Canadian studies to complement the definitive works on industrial power in the United States by L.C. Hunter, A History of Industrial Power in the United States, 1780-1930: Vol.1: Waterpower in the Century of the Steam Engine; Vol.2: Steam Power (Charlottesville: University Press of Virginia for the Eleutherian Mills-Hagley Foundation, 1979 and 1985).

especially, but also such sectors as leather, non-metallic minerals, chemicals, tobacco, miscellaneous manufacturing, transportation equipment and printing, as well as the activities of trade, services, construction and utilities. The furniture industry illustrates the co-existence of several scales of operation in a single industry, with only three factories, a handful of smaller businesses and a host of artisanal cabinet-makers.[27]

USE OF POWER

SIZE OF WORKFORCE	non-powered (hand/horse only)	powered by water or steam	SIZE OF WORKFORCE
51+	MANUFACTORIES (larger)	FACTORIES (larger)	51+
26–50	MANUFACTORIES (smaller)	FACTORIES (smaller)	26–50
6–25	SWEATSHOPS and larger CRAFTSHOPS	MILLS	6–25
1–5	ARTISANS' CRAFTSHOPS	POWERED WORKSHOPS, smaller MILLS	1–5
	non-powered (hand/horse only)	powered by water or steam	

Figure 9: Typology of work environments, 1871

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[27] For a brief discussion of the Ontario furniture industry in 1871 (and of flour mills, breweries and farm machinery works) see Elizabeth Bloomfield and Gerald Bloomfield, "Mills, Factories and Craftshops in Ontario, 1870: A Machine-Readable Source for Material Historians", Material History Bulletin 25 (1987): 35-47.

Table 10

DISTRIBUTION OF INDUSTRIAL WORKERS IN WORK ENVIRONMENTS IN ONTARIO URBAN PLACES, 1871:
(percentages)

		NON-POWERED BY WATER/STEAM				SUBTOTAL	POWERED BY WATER/STEAM				SUBTOTAL
SECTOR	FIRM SIZE	1-5	6-25	26-50	51+		1-5	6-25	26-50	51+	
1-4	Primary	3.9	8.6		51.3	63.8		26.3		9.9	36.2
5.01	Foods/beverages	26.2	16.1	3.3		45.6	14.6	26.8	9.0	4.0	54.4
5.02	Tobacco	5.1	24.1	14.0	11.4	54.6		6.0	18.9	20.5	45.4
5.04	Leather	32.7	22.7	4.3	14.9	74.6	3.1	7.1	0.6	14.6	25.4
5.05	Textiles	5.1	1.9			7.0	4.3	24.0	19.3	45.5	93.0
5.06	Knit/hosiery	0.4	5.7	16.9		23.1				77.0	77.0
5.07	Clothing	19.0	44.4	17.0	14.7	95.1				4.9	4.9
5.08	Wood	6.1	6.7	1.6		14.4	6.0	25.2	11.3	42.9	85.6
5.09	Furniture	16.6	10.7			27.3	4.3	20.2	12.9	35.3	72.7
5.10	Paper	3.1	5.2			8.4	1.7	28.7	26.6	34.6	91.6
5.11	Printing	15.5	22.7	5.8	10.1	54.1		4.7	8.4	32.8	45.9
5.12	Primary metal	1.0				1.0	5.0	19.9	27.7	46.4	96.0
5.13	Metal fabricatg	23.4	14.7			38.1	1.6	10.5	19.0	30.8	61.9
5.14	Machinery	3.8	1.4			5.2	2.7	21.4	13.5	57.2	94.8
5.15	Transport.equpmt	13.8	25.8	2.9	4.8	47.3	0.7	5.5	7.0	39.6	52.7
5.17	Non-metal.mins	21.0	38.7	7.9	4.3	71.9	0.7	4.2		23.2	28.1
5.18	Fuels	0.8				0.8	20.3	78.8			99.2
5.19	Chemicals	49.1	20.2			69.3	1.5	24.1	5.2		30.7
5.20	Miscell.mfg	21.5	36.9	9.0		67.4	0.9	4.1	9.7	17.8	32.5
6.00	Construction	23.5	49.1	5.2	7.1	84.9	0.9	10.1	4.1		15.1
7.00	Utilities	13.0	47.8			60.8	2.2			37.0	39.2
8.00	Trade/repair	93.0	7.0			100.0					
10.00	Services	89.1	8.1			97.2	0.4	2.4			2.8
ALL INDUSTRIES		17.8	20.2	4.8	5.5	48.3	3.2	13.0	8.3	27.2	51.7

Source: Compiled from CANIND71 database.

Manufactories, not powered but with at least 26 workers, were significant workplaces in the making of clothing (31 per cent), tobacco products (25 per cent), boots and shoes (19 per cent) and printing (16 per cent). Artisanal shops, without power and with five or fewer workers, were most common in food and beverages (26 per cent), clothing (19 per cent), leather working including boots and shoes (33 per cent), metal fabricating (27 per cent), and predominated in services such as blacksmiths (89 per cent). Non-powered workplaces with between 6 and 25 workers, defined by Laurie and Schmitz as sweatshops, may in some cases have been rather large artisanal craftshops These workplaces were most common in clothing (44 per cent), but also found in the tobacco, leather, printing, transportation equipment and miscellaneous sectors.

Table 11

Distribution of workers in work environments, 1871

Work Environment	**Rural Ontario**	**Urban Ontario**	**Hamilton**	**Toronto**
Non-Powered	%	%	%	%
Artisans (1-5 emp)	45.4	17.8	7.5	6.1
Sweatshops (6-25 emp)	5.8	20.2	18.7	16.2
Manufactories (26-50 emp)	0.3	4.8	6.0	6.6
Manufactories (>51 emp)	0.5	5.5	7.9	15.3
Sub-Total	52.0	48.3	40.1	44.2
Powered				
Small (1-5 emp)	15.8	3.2	0.5	0.5
Medium (6-25 emp)	19.6	13.0	6.0	5.4
Factories (26-50 emp)	5.4	8.3	6.6	7.2
Factories (>51 emp)	7.2	27.2	46.8	42.7
Sub-Total	48.0	51.7	59.9	55.8
TOTAL	100.0			

The workplace environments of Toronto and Hamilton, as the largest centres, are compared with the aggregate patterns for all Ontario urban places and for rural Ontario in Table 11. Toronto had much the same proportion of workers in powered establishments as the aggregate of all Ontario urban centres, but its workers were in larger workplaces, whether powered or not, than was the case in smaller urban centres. Toronto factories (powered establishments employing at least 26 workers) accounted for nearly 43 per cent of the city's total, compared with 27 per cent of the workforce in all Ontario urban centres and only 7 per cent in rural Ontario. Toronto manufactories (non-powered establishments with 26 or more workers) employed a further 15

per cent, compared with only 5 per cent in Ontario urban centres generally and half of one per cent in rural Ontario.[28]

Hamilton had an even larger share (47 per cent) of its industrial workers in factories, particularly in primary metals, machinery and transportation equipment (railway workshops), but only 8 per cent of Hamilton's workers were in manufactories. The implications of these structural changes for the segregation of home and workplace and for a lengthening "journey to work" in the later nineteenth century have been introduced for Toronto by Goheen and for Hamilton by Doucet.[29] Artisanal shops were much more weakly represented in the cities of Toronto and Hamilton than in other urban centres of Ontario and especially in rural Ontario.

Table 12

Factories, manufactories and average size of leading employer in Ontario urban places in size-classes, 1871:

Size-Class (N Towns)		Factories #(N Towns)	Manufactories #(N Towns)	Employment by Leading Firm		
				Maximum	Minimum	Mean
1	(51)	11 (8)	2 (2)	311	3	27
2	(61)	49 (28)	7 (4)	209	7	46
3	(24)	49 (19)	8 (7)	266	15	80
4	(7)	31 (7)	18 (6)	315	42	137
5	(3)	30 (3)	21 (2)	300	122	198
6	(2)	74 (2)	49 (2)	984	561	772
Totals	(148)	244 (67)	105 (23)			

Factories using inanimate power and employing large workforces that symbolized the symbol of the industrial era were concentrated in urban areas. But not all towns and villages But in 1871 and later, most industrial workers laboured in the smaller shops of an earlier era. A good many of Ontario's towns and villages had neither factory or manufactory. Table 12 summarizes the extent to which factories and manufactories were found throughout the Ontario urban system in 1871, information presented in more detail in Appendix A-8 and A-9. Altogether, only 67 of the 148 urban and proto-urban places defined for Ontario had at least one factory, and only 23 had at least one

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[28] The combination of scales of industrial operation has been documented for Toronto by Kealey, Toronto Workers Respond to Industrial Capitalism, 28-30, 299-306.

[29] P.G. Goheen, Victorian Toronto, 1850-1900: Pattern and Process of Growth (Department of Geography, University of Chicago, 1970); M.J. Doucet, "Working Class Housing in a Small Nineteenth Century Canadian City: Hamilton, Ontario 1852-1881", in Essays in Canadian Working Class History, edited by G.S. Kealey and P. Warrian (Toronto, 1976): 83-105.

manufactory. In the lower reaches of the urban hierarchy, among the places with under 2,500 population, factories and especially manufactories were exceptional. Even among the 24 urban places with between 2,500 and 5,000 people, only 19 had a factory and only six a manufactory. Artisanal shops and mills were still by far the most common workplaces in Ontario's smaller urban centres.

6 WAS INDUSTRY THE ENGINE OF URBAN GROWTH?

What were the critical factors and stages in the concentration of industrial activity in urban centres? How, precisely, did industrial growth affect general urban development? To what extent was the selective growth of centres in the Ontario urban system based on their industrial performance? Was industry really the engine of urban growth? These questions still have to be addressed. How can our more detailed knowledge based on the 1871 manuscript census contribute to further enquiry?

Answers to these questions require research with a longitudinal perspective, capable of weighing the influence of various factors in change over fair periods of time. While material as systematic and detailed as the 1871 manuscript industrial census does not survive for any earlier or later dates, it should be possible to use the precision of our data for individual establishments in 1871 to trace linkages back to the earlier period and forward to 1900 or even later. Our capacity to aggregate establishment records, for industry types or for geographical units such as communities or municipalities, will also permit us to relate the 1871 data to other types of records at a more generalized level.[30]

Among the possibilities for research in the pre-1871 period, we might probe the origins and early development of specific enterprises operating in 1871.[31] Systematic and comparative research of enterprises in different industry types and geographical areas should help us to understand the process of early industrialization in relation to local agricultural economies and societies. To what extent did early industrial enterprises evolve organically and gradually from simple to complex processes, from small to larger scales of operation? How many businesses were created as instant mills or factories, using technology and methods or organization developed elsewhere?

We might also consider the role of early enterprises in their community and regional contexts, defining leading businesses around which others may have clustered, or whose entrepreneurs may have invested in other sectors. How did Ontario's location on the New World settlement frontier affect its process of industrialization, in comparison with that recorded in Britain and

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[30] For a preliminary survey of some of these possibilities, see E. Bloomfield, Urban-Industrial Growth Processes in Southern Ontario, 1870-1930 (Winnipeg: Institute of Urban Studies, University of Winnipeg, 1986).

[31] For some longitudinal analysis of Ontario's sixty largest businesses in 1871, see Bloomfield and Bloomfield, Industrial Leaders: The Largest Manufacturing Firms in Ontario, 1871, #8 in this series of reports.

Europe by scholars of proto-industrialization? Can a longitudinal approach, working back from the known benchmark of 1871, substantiate the hypothetical process of diversification from consumer to producer goods, initially in well-defined regions of specialization?

For the period since 1871, too, it is possible to take the longitudinal view of specific enterprises or industry groups, and of industrialization in communities or regions. What was the subsequent survival rate of industrial businesses operating in 1871? How many of the top 100 in Ontario were still flourishing in 1900, or in 1930? Did the fates of such enterprises reflect their industry type or location, their management or economies of scale?

It is tempting to speculate on the possibility of predicting subsequent urban-industrial growth from the industrial status and structure of cities and towns at an early date such as 1871. How important was the degree of industrialization of a town's or city's population? Was specialization in a particular industry a help or a handicap in maintaining subsequent growth? How crucial in the development of a town or city in the late nineteenth and early twentieth centuries were size of urban population, good railway connections and competition, local entrepreneurship, community attitudes to industry, the early development of steam power, or the quality of urban services?

APPENDICES

Several detailed tabulations are presented as appendices to this report, so that they can amplify without clogging the text. Appendices A-1 and A-2 list the urban places, both incorporated and those defined as "proto-urban", first alphabetically and then in geographical order. Proto-urban places are indicated by asterisks. Abbreviated code names used for variables in the database are used in several of these tables. The explanation of each code name follows:

BOY: Boys (males under 16 years) employed in industrial activity.
CAPITAL: Value of fixed capital reported by proprietors; same as FIXCAP.
CDID: Census district number used in 1871 census.
CDISTRICT:Census district name used in 1871 census.
CED: Census enumerator's division, a small part of a census district.
ESTAB: Industrial establishment for which data were recorded in 1871 census manuscripts.
FACTY: Number of factories, using power and employing at least 26 workers.
FIXCAP: Value of fixed capital reported by proprietors; same as CAPITAL.
FORCE: Units (in "horse power" equivalents) of non-manual power reported by proprietors.
GIR: Girls employed (females under 16 years) in industrial activity.
LEADEMP: Number employed by largest employer in a place; also PRIMEMP.
LEADSEC: Leading industry group or sector in an urban place.
LEAD%: Percentage of industrial workers in an urban place employed in the leading industry group or LEADSEC there.
MANUF: Number of manufactories, using no inanimate power and employing at least 26 workers.
MEN: Men (males over 16 years) employed in industrial activity.
PERCENT: Percentage of a town's total population employed in industry.
POP: Population of urban place in 1871.
PRIMEMP: Number employed by largest employer in a place; also LEADEMP.
PRODUCTS: Value of industrial production ($); same as SUMPROC.
PROPRIOR: Name of proprietor as stated in census schedules.
RAWMAT: Value of raw materials used in industry ($): same as SUMRAWC.
SIC: Standard Industrial Classification.
SIZE: Size class of urban place, from (1): under 1,000 population to (6): over 25,000 population.
SUMPROC: Value of industrial production ($); same as PRODUCTS.
SUMRAWC: Value of raw materials used in industry ($): same as RAWMAT.
TOTEMP: Total number of employees, the sum of MEN, WOM, BOY and GIR.
TYPE: Type of urban place based on combination of percentage of total population employed in industry, and percentage of industrial population employed in leading industry group or sector.
TYPEEST: Type of establishment as stated by enumerator in census schedules.
TYPEPOW: Type of power reported: steam, water, horse, W/S (water/steam).
VADD: Value added in manufacturing ($) = production $ - raw materials $.
WAGES: Wages paid to industrial workers ($).
WOM: Women (females over 16 years) employed in industrial activity.

Appendix A-1 Ontario urban places, 1871, in alphabetical order

URBAN PLACE	CENSUS DISTRICT	CDID	CED
ACTON*	HALTON	0038	F
ALEXANDRIA*	GLENGARRY	0074	D
ALLISTON*	SIMCOE SOUTH	0041	A
ALMONTE	LANARK NORTH	0080	B
AMHERSTBURG	ESSEX	0001	B
ARNPRIOR	RENFREW SOUTH	0081	B
ASHBURNHAM	PETERBOROUGH EAST	0057	B
AURORA	YORK NORTH	0043	C
AYLMER*	ELGIN EAST	0006	C
BARRIE	SIMCOE NORTH	0042	E
BATH	LENNOX	0063	H
BELLEVILLE	HASTINGS WEST	0060	C
BERLIN	WATERLOO NORTH	0032	D
BLENHEIM*	KENT	0002	D
BOTHWELL	BOTHWELL	0003	E
BOWMANVILLE	DURHAM WEST	0050	B
BRACEBRIDGE*	MUSKOKA	0085	I
BRADFORD	SIMCOE SOUTH	0041	C
BRAMPTON	PEEL	0039	E
BRANTFORD	BRANT SOUTH	0015	D
BRIGHTON	NORTHUMBERLAND EAST	0055	D
BROCKVILLE	BROCKVILLE	0068	
BURLINGTON*	HALTON	0038	A
CALEDONIA	HALDIMAND	0017	H
CAMPBELLFORD*	NORTHUMBERLAND EAST	0055	G
CARLETON PLACE	LANARK SOUTH	0079	J
CAYUGA	HALDIMAND	0017	E
CHATHAM	KENT	0002	G
CHESLEY*	BRUCE NORTH	0028	D
CHIPPAWA	WELLAND	0019	K
CLIFTON	WELLAND	0019	L
CLINTON	HURON NORTH	0026	F
COBOURG	NORTHUMBERLAND WEST	0054	B
COLBORNE	NORTHUMBERLAND EAST	0055	B
COLLINGWOOD	SIMCOE NORTH	0042	B
CORNWALL	CORNWALL	0073	
DESERONTO*	HASTINGS EAST	0061	B
DRESDEN*	BOTHWELL	0003	C
DUNDAS	WENTWORTH NORTH	0023	C
DUNNVILLE	MONCK	0018	B
DURHAM*	GREY SOUTH	0036	E
ELMIRA*	WATERLOO NORTH	0032	B
ELORA	WELLINGTON CENTRE	0034	B
EMBRO	OXFORD NORTH	0014	C
EXETER*	HURON SOUTH	0025	A
FERGUS	WELLINGTON CENTRE	0034	D
FOREST*	LAMBTON	0004	H
FORT ERIE	WELLAND	0019	D
GALT	WATERLOO SOUTH	0031	D
GANANOQUE	LEEDS SOUTH	0067	B
GARDEN ISLAND	FRONTENAC	0065	C

ONTARIO URBAN PLACES, 1871

URBAN PLACE	CENSUS DISTRICT	CDID	CED
GEORGETOWN	HALTON	0038	G
GODERICH	HURON SOUTH	0025	G
GRIMSBY*	LINCOLN	0021	F
GUELPH	WELLINGTON SOUTH	0033	C
HAMILTON	HAMILTON	0024	
HANOVER*	GREY SOUTH	0036	
HARRISTON*	WELLINGTON NORTH	0035	C
HAWKESBURY	PRESCOTT	0075	C
HESPELER	WATERLOO SOUTH	0031	G
HOLLAND LANDING	YORK NORTH	0043	F
INGERSOLL	OXFORD SOUTH	0013	F
IROQUOIS	DUNDAS	0071	B
KEMPTVILLE	LEEDS N/GRENVILLE	0070	F
KINCARDINE	BRUCE SOUTH	0027	F
KINGSTON	KINGSTON	0066	
KINGSVILLE*	ESSEX	0001	E
LANARK	LANARK NORTH	0080	E
LEAMINGTON*	ESSEX	0001	F
LINDSAY	VICTORIA SOUTH	0052	C
LISTOWEL	PERTH NORTH	0030	H
LONDON	LONDON	0010	
LONDON EAST*	MIDDLESEX EAST	0009	C
MEAFORD*	GREY NORTH	0037	H
MERRICKVILLE	LEEDS N/GRENVILLE	0070	D
MERRITTON*	LINCOLN	0021	A
MILTON	HALTON	0038	D
MITCHELL	PERTH SOUTH	0029	E
MORRISBURG	DUNDAS	0071	D
MOUNT FOREST	WELLINGTON NORTH	0035	E
NAPANEE	LENNOX	0063	E
NEW EDINBURGH	RUSSELL	0076	F
NEW HAMBURG	WATERLOO SOUTH	0031	B
NEWBURGH	ADDINGTON	0064	B
NEWCASTLE	DURHAM WEST	0050	E
NEWMARKET	YORK NORTH	0043	D
NIAGARA	NIAGARA	0020	
OAKVILLE	HALTON	0038	C
OIL SPRINGS	LAMBTON	0004	C
ORANGEVILLE	WELLINGTON CENTRE	0034	I
ORILLIA	SIMCOE NORTH	0042	L
OSHAWA	ONTARIO SOUTH	0048	E
OTTAWA	OTTAWA	0077	
OWEN SOUND	GREY NORTH	0037	G
PARIS	BRANT NORTH	0016	C
PARKHILL*	MIDDLESEX NORTH	0008	B
PEMBROKE	RENFREW NORTH	0082	E
PENETANGUISHENE	SIMCOE NORTH	0042	G
PERTH	LANARK SOUTH	0079	H
PETERBOROUGH	PETERBOROUGH WEST	0056	C
PETROLIA	LAMBTON	0004	D
PICTON	PRINCE EDWARD	0059	E

ONTARIO URBAN PLACES, 1871

URBAN PLACE	CENSUS DISTRICT	CDID	CED
PORT COLBORNE	WELLAND	0019	B
PORT DALHOUSIE	LINCOLN	0021	C
PORT ELGIN*	BRUCE NORTH	0028	B
PORT HOPE	DURHAM EAST	0051	B
PORT PERRY*	ONTARIO NORTH	0049	B
PORTSMOUTH	FRONTENAC	0065	B
PRESCOTT	GRENVILLE SOUTH	0069	B
PRESTON	WATERLOO SOUTH	0031	F
RENFREW	RENFREW SOUTH	0081	I
RICHMOND	CARLETON	0078	E
RIDGETOWN*	BOTHWELL	0003	A
ROCKLAND*	RUSSELL	0076	A
SANDWICH	ESSEX	0001	I
SARNIA	LAMBTON	0004	G
SEAFORTH	HURON NORTH	0026	I
SIMCOE	NORFOLK NORTH	0012	D
SMITHS FALLS	LANARK SOUTH	0079	B
SOUTHAMPTON	BRUCE NORTH	0028	C
ST CATHARINES	LINCOLN	0021	B
ST MARYS	PERTH SOUTH	0029	B
ST THOMAS	ELGIN EAST	0006	B
STAYNER*	SIMCOE NORTH	0042	A
STIRLING	HASTINGS NORTH	0062	B
STRATFORD	PERTH NORTH	0030	C
STRATHROY	MIDDLESEX WEST	0007	F
STREETSVILLE	PEEL	0039	B
THOROLD	WELLAND	0019	I
TILSONBURG*	OXFORD SOUTH	0013	A
TORONTO	TORONTO WEST	0046	
TRENTON	HASTINGS WEST	0060	B
UXBRIDGE*	ONTARIO NORTH	0049	A
VANKLEEK HILL*	PRESCOTT	0075	B
VIENNA	ELGIN EAST	0006	F
WALKERTON*	BRUCE SOUTH	0027	H
WALKERVILLE*	ESSEX	0001	J
WALLACEBURG*	KENT	0002	F
WARDSVILLE	MIDDLESEX WEST	0007	B
WATERLOO	WATERLOO NORTH	0032	E
WELLAND	WELLAND	0019	F
WELLINGTON	PRINCE EDWARD	0059	B
WHITBY	ONTARIO SOUTH	0048	C
WIARTON*	BRUCE NORTH	0028	F
WINDSOR	ESSEX	0001	K
WINGHAM*	HURON NORTH	0026	K
WOODSTOCK	OXFORD NORTH	0014	E
YORKVILLE	YORK EAST	0045	B

Appendix A-2 Ontario urban places, 1871, in geographical order

CDID	CED	URBAN PLACE	CENSUS DISTRICT
0001	B	AMHERSTBURG	ESSEX
0001	E	KINGSVILLE*	ESSEX
0001	F	LEAMINGTON*	ESSEX
0001	I	SANDWICH	ESSEX
0001	J	WALKERVILLE*	ESSEX
0001	K	WINDSOR	ESSEX
0002	D	BLENHEIM*	KENT
0002	F	WALLACEBURG*	KENT
0002	G	CHATHAM	KENT
0003	A	RIDGETOWN*	BOTHWELL
0003	C	DRESDEN*	BOTHWELL
0003	E	BOTHWELL	BOTHWELL
0004	C	OIL SPRINGS	LAMBTON
0004	D	PETROLIA	LAMBTON
0004	G	SARNIA	LAMBTON
0004	H	FOREST*	LAMBTON
0006	B	ST THOMAS	ELGIN EAST
0006	C	AYLMER*	ELGIN EAST
0006	F	VIENNA	ELGIN EAST
0007	B	WARDSVILLE	MIDDLESEX WEST
0007	F	STRATHROY	MIDDLESEX WEST
0008	B	PARKHILL*	MIDDLESEX NORTH
0009	C	LONDON EAST*	MIDDLESEX EAST
0010		LONDON	LONDON
0012	D	SIMCOE	NORFOLK NORTH
0013	A	TILSONBURG*	OXFORD SOUTH
0013	F	INGERSOLL	OXFORD SOUTH
0014	C	EMBRO	OXFORD NORTH
0014	E	WOODSTOCK	OXFORD NORTH
0015	D	BRANTFORD	BRANT SOUTH
0016	C	PARIS	BRANT NORTH
0017	E	CAYUGA	HALDIMAND
0017	H	CALEDONIA	HALDIMAND
0018	B	DUNNVILLE	MONCK
0019	B	PORT COLBORNE	WELLAND
0019	D	FORT ERIE	WELLAND
0019	F	WELLAND	WELLAND
0019	I	THOROLD	WELLAND
0019	K	CHIPPAWA	WELLAND
0019	L	CLIFTON	WELLAND
0020		NIAGARA	NIAGARA
0021	A	MERRITTON*	LINCOLN
0021	B	ST CATHARINES	LINCOLN
0021	C	PORT DALHOUSIE	LINCOLN
0021	F	GRIMSBY*	LINCOLN
0023	C	DUNDAS	WENTWORTH NORTH
0024		HAMILTON	HAMILTON
0025	A	EXETER*	HURON SOUTH
0025	G	GODERICH	HURON SOUTH
0026	F	CLINTON	HURON NORTH
0026	I	SEAFORTH	HURON NORTH

ONTARIO URBAN PLACES LOCATED IN CENSUS DISTRICTS, 1871

CDID	CED	URBAN PLACE	CENSUS DISTRICT
0026	K	WINGHAM*	HURON NORTH
0027	F	KINCARDINE	BRUCE SOUTH
0027	H	WALKERTON*	BRUCE SOUTH
0028	B	PORT ELGIN*	BRUCE NORTH
0028	C	SOUTHAMPTON	BRUCE NORTH
0028	D	CHESLEY*	BRUCE NORTH
0028	F	WIARTON*	BRUCE NORTH
0029	B	ST MARYS	PERTH SOUTH
0029	E	MITCHELL	PERTH SOUTH
0030	C	STRATFORD	PERTH NORTH
0030	H	LISTOWEL	PERTH NORTH
0031	B	NEW HAMBURG	WATERLOO SOUTH
0031	D	GALT	WATERLOO SOUTH
0031	F	PRESTON	WATERLOO SOUTH
0031	G	HESPELER	WATERLOO SOUTH
0032	B	ELMIRA*	WATERLOO NORTH
0032	D	BERLIN	WATERLOO NORTH
0032	E	WATERLOO	WATERLOO NORTH
0033	C	GUELPH	WELLINGTON SOUTH
0034	B	ELORA	WELLINGTON CENTRE
0034	D	FERGUS	WELLINGTON CENTRE
0034	I	ORANGEVILLE	WELLINGTON CENTRE
0035	C	HARRISTON*	WELLINGTON NORTH
0035	E	MOUNT FOREST	WELLINGTON NORTH
0036		HANOVER*	GREY SOUTH
0036	E	DURHAM*	GREY SOUTH
0037	G	OWEN SOUND	GREY NORTH
0037	H	MEAFORD*	GREY NORTH
0038	A	BURLINGTON*	HALTON
0038	C	OAKVILLE	HALTON
0038	D	MILTON	HALTON
0038	F	ACTON*	HALTON
0038	G	GEORGETOWN	HALTON
0039	B	STREETSVILLE	PEEL
0039	E	BRAMPTON	PEEL
0041	A	ALLISTON*	SIMCOE SOUTH
0041	C	BRADFORD	SIMCOE SOUTH
0042	A	STAYNER*	SIMCOE NORTH
0042	B	COLLINGWOOD	SIMCOE NORTH
0042	E	BARRIE	SIMCOE NORTH
0042	G	PENETANGUISHENE	SIMCOE NORTH
0042	L	ORILLIA	SIMCOE NORTH
0043	C	AURORA	YORK NORTH
0043	D	NEWMARKET	YORK NORTH
0043	F	HOLLAND LANDING	YORK NORTH
0045	B	YORKVILLE	YORK EAST
0046		TORONTO	TORONTO WEST
0048	C	WHITBY	ONTARIO SOUTH
0048	E	OSHAWA	ONTARIO SOUTH
0049	A	UXBRIDGE*	ONTARIO NORTH
0049	B	PORT PERRY*	ONTARIO NORTH

ONTARIO URBAN PLACES LOCATED IN CENSUS DISTRICTS, 1871

CDID	CED	URBAN PLACE	CENSUS DISTRICT
0050	B	BOWMANVILLE	DURHAM WEST
0050	E	NEWCASTLE	DURHAM WEST
0051	B	PORT HOPE	DURHAM EAST
0052	C	LINDSAY	VICTORIA SOUTH
0054	B	COBOURG	NORTHUMBERLAND WEST
0055	B	COLBORNE	NORTHUMBERLAND EAST
0055	D	BRIGHTON	NORTHUMBERLAND EAST
0055	G	CAMPBELLFORD*	NORTHUMBERLAND EAST
0056	C	PETERBOROUGH	PETERBOROUGH WEST
0057	B	ASHBURNHAM	PETERBOROUGH EAST
0059	B	WELLINGTON	PRINCE EDWARD
0059	E	PICTON	PRINCE EDWARD
0060	B	TRENTON	HASTINGS WEST
0060	C	BELLEVILLE	HASTINGS WEST
0061	B	DESERONTO*	HASTINGS EAST
0062	B	STIRLING	HASTINGS NORTH
0063	E	NAPANEE	LENNOX
0063	H	BATH	LENNOX
0064	B	NEWBURGH	ADDINGTON
0065	B	PORTSMOUTH	FRONTENAC
0065	C	GARDEN ISLAND	FRONTENAC
0066		KINGSTON	KINGSTON
0067	B	GANANOQUE	LEEDS SOUTH
0068		BROCKVILLE	BROCKVILLE
0069	B	PRESCOTT	GRENVILLE SOUTH
0070	D	MERRICKVILLE	LEEDS N/GRENVILLE
0070	F	KEMPTVILLE	LEEDS N/GRENVILLE
0071	B	IROQUOIS	DUNDAS
0071	D	MORRISBURG	DUNDAS
0073		CORNWALL	CORNWALL
0074	D	ALEXANDRIA*	GLENGARRY
0075	B	VANKLEEK HILL*	PRESCOTT
0075	C	HAWKESBURY	PRESCOTT
0076	A	ROCKLAND*	RUSSELL
0076	F	NEW EDINBURGH	RUSSELL
0077		OTTAWA	OTTAWA
0078	E	RICHMOND	CARLETON
0079	B	SMITHS FALLS	LANARK SOUTH
0079	H	PERTH	LANARK SOUTH
0079	J	CARLETON PLACE	LANARK SOUTH
0080	B	ALMONTE	LANARK NORTH
0080	E	LANARK	LANARK NORTH
0081	B	ARNPRIOR	RENFREW SOUTH
0081	I	RENFREW	RENFREW SOUTH
0082	E	PEMBROKE	RENFREW NORTH
0085	I	BRACEBRIDGE*	MUSKOKA

APPENDIX A-3: DEFINITION OF PROTO-URBAN CENTRES IN 1871

In examining the urban character of industrial activity in Ontario, we were primarily interested in the 110 urban places which were incorporated as municipalities by 1871. But we were also concerned to examine over 40 centres we defined as "proto-urban" because they would become incorporated by the end of the nineteenth century and because they were industrial centres of sufficient significance to be included in our Industrial Time-Series database. There was no problem in identifying establishments in incorporated urban centres, as these geographical units were defined as census sub-divisions in Ontario. But the proto-urban places required some special procedures.

Centres regarded as candidates for proto-urban status, on the basis of their subsequent incorporation and industrial development, were first located within their census district and census sub-division (township) boundaries. Historical county atlases proved the most useful aid in this step, which also enabled us to select the appropriate microfilm reels for further search.

The microfilmed census schedules do not include precise locational references, below the level of the incorporated township or other municipal unit. Thus it was necessary to consult other contemporary sources for help in distinguishing those industrial establishments concentrated in a particular proto-urban hamlet or village. Of the various sources tried, including the R.G. Dun reference books for 1870-1 and various county directories, Lovell's Province of Ontario Directory for 1871 was found to be the single most useful. Lovell's Directory usually listed more establishments for any village or locality than any other source, thus providing an excellent range of businesses to compare with those in the manuscript census schedules; it also gave population estimates for each village. Other directories, Dun reference books and historical atlases were also checked for possible matches with establishments recorded in the census schedules.

Rigorous matching standards were applied in comparing the Lovell's Directory lists with the manuscript census records. Surnames and occupational or industry designations had to be virtually identical for an establishment to be included in the machine-readable record. The following table shows that, in almost all proto-urban centres, Lovell listed more industrial enterprises than could be found in the manuscript census schedules. One reason for the difference is that Lovell's compilers probably included small businesses or producers who worked in their homes, while the census enumerators were instructed to exclude all but industrial businesses carried on in separate establishments.

Fifteen of the 38 proto-urban places we eventually included had estimated populations of 1,000 or more in 1871, thus exceeding 28 of the incorporated urban centres already included in the project. Several places initially met the criteria for proto-urban status, based on a pre-1900 date of incorporation and inclusion in the Industrial Time-Series, but could not be traced in contemporary sources such as Lovell's Directory and the Dun reference books. These four places - Essex, Midland, Palmerston and Tilbury - were found to have come into existence after the taking of the 1871 Census, and are therefore not distinguished here.

PROTO-URBAN CENTRES DEFINED FOR ONTARIO, 1871

	Date of First Incorporation	Number of Establishments:	
		(a) Directory	(b) MS Census
ACTON	1873	38	23
ALEXANDRIA	1883	34	24
ALLISTON	1874	22	5
AYLMER	1871	96	29
BLENHEIM	1874	42	18
BRACEBRIDGE	1874	23	14
BURLINGTON	1873	33*	12
CAMPBELLFORD	1875	57	23
CHESLEY	1879	17	15
DESERONTO (Mill Point)	1872	58	6
DRESDEN	1871	28	26
DURHAM	1872	96	43
ELMIRA	1887	49	27
EXETER	1873	50	29
FOREST	1872	27	8
GRIMSBY	1876	56	19
HANOVER	1899	82	20
HARRISTON	1872	47	23
KINGSVILLE	1877	33	22
LEAMINGTON	1875	23	15
LONDON EAST	1875	40	40
MEAFORD	1874	99	41
MERRITTON	1874	63	10
PARKHILL	1871	81	25
PENETANGUISHENE	1876	32	8
PORT ELGIN	1874	68	16
PORT PERRY	1872	80	31
RIDGETOWN	1876	30	15
ROCKLAND	1887	3	1
STAYNER	1872	59	26
TILSONBURG	1872	78	31
UXBRIDGE	1872	98	31
VANKLEEK HILL	1897	32	16
WALKERTON	1871	69	26
WALKERVILLE	1890	2	2
WALLACEBURG	1874	14	15
WIARTON	1880	17	5
WINGHAM	1873	81	26

Source for Burlington was James Sutherland's County of Halton Directory for 1869-70; source for all other places was Lovell's Province of Ontario Directory for 1871.

Appendix A-4 Summary of industrial data for all Ontario urban centres, 1871, listed in size-classes

URBAN PLACE	POP	ESTAB	MEN	WOM	BOY	GIR	TOTEMP	WAGES	RAWMAT	PRODUCTS	FORCE	CAPITAL
** SIZE GROUP 6												
TORONTO	56092	565	7259	2244	754	328	10585	3034248	7528311	15405213	2499	11017790
HAMILTON	26716	329	4347	765	545	118	5775	1887542	2909431	5664644	1216	1578664
** Subtotal **												
	82808	894	11606	3009	1299	446	16360	4921790	10437742	21069857	3715	12596454
** SIZE GROUP 5												
OTTAWA	21745	243	2592	490	117	25	3224	904987	2628349	4264399	4489	1920980
LONDON	15826	217	1800	315	156	25	2296	697089	1996762	3558453	533	1030264
KINGSTON	12407	161	1017	198	93	22	1330	377804	751850	1396336	243	659675
** Subtotal **												
	49978	621	5409	1003	366	72	6850	1979880	5376961	9219188	5265	3610919
** SIZE GROUP 4												
ST CATHARINES	7864	158	1106	197	77	28	1408	425360	1882761	2577000	958	506340
BRANTFORD	8107	99	1013	164	58	18	1253	424752	911378	1840877	442	790935
GUELPH	6878	111	876	183	80	4	1143	377387	1063117	1839170	608	485686
BELLEVILLE	7305	102	743	109	31	3	886	215068	326798	821665	645	285870
BROCKVILLE	5102	113	663	121	60	4	848	223263	292807	685220	199	267392
CHATHAM	5873	96	647	46	30	8	731	237645	479890	904430	524	274890
PORT HOPE	5114	77	398	144	17	11	570	151423	522683	873200	363	264450
** Subtotal **												
	46243	756	5446	964	353	76	6839	2054898	5479434	9541562	3739	2875563
** SIZE GROUP 3												
GALT	3827	74	635	104	43	9	791	226843	662413	1213610	561	395726
PETERBOROUGH	4611	96	618	108	26	8	760	217212	394732	811365	396	306595
OSHAWA	3185	42	624	66	40	2	732	259350	612776	1090905	274	379450
DUNDAS	3135	64	445	146	55	37	683	182575	461224	882777	673	506330
INGERSOLL	4022	69	547	45	35	0	627	194917	466294	856355	430	330650
STRATFORD	4313	82	380	111	43	10	544	128782	409107	738506	241	193650
COBOURG	4442	87	360	82	43	17	502	126759	411989	647575	268	285850
PARIS	2640	45	325	109	19	3	456	108120	549482	845097	288	186120
LINDSAY	4049	79	328	86	31	4	449	124797	376969	659977	879	256800
WOODSTOCK	3982	72	390	31	22	2	445	113700	307322	503455	335	160625
STRATHROY	3232	62	348	35	50	7	440	111120	265870	504400	291	154150
BARRIE	3398	75	371	12	26	2	411	128958	121055	347844	321	143995
BOWMANVILLE	3034	60	284	91	29	0	404	118170	342744	560305	247	133370
ST MARYS	3120	76	254	115	27	7	403	90479	273640	462136	289	124220
GODERICH	3954	65	307	33	46	3	389	101823	660826	897097	561	231210
NAPANEE	2967	62	305	59	19	0	383	85912	307714	513500	514	127615
COLLINGWOOD	2829	50	289	24	15	0	328	79906	235946	429365	436	200050
OWEN SOUND	3369	81	275	36	15	0	326	72742	161146	338792	255	108937
BERLIN	2743	68	256	27	15	20	318	56085	164875	320669	204	98460
PRESCOTT	2617	40	218	66	21	2	307	101888	176439	477029	225	140300
WINDSOR	4253	49	196	32	18	9	255	61148	138196	245294	91	67320
WHITBY	2732	46	205	30	9	0	244	86249	104374	251990	82	134400
SARNIA	2929	55	176	34	10	2	222	59146	136890	371103	158	114185
PETROLIA	2651	48	167	16	4	1	188	76376	297156	495967	188	99450
** Subtotal **												
	82034	1547	8303	1498	661	145	10607	2913057	8039179	14465113	8207	4879458

SUMMARY OF INDUSTRIAL DATA FOR ONTARIO URBAN CENTRES, 1871

URBAN PLACE	POP	ESTAB	MEN	WOM	BOY	GIR	TOTEMP	WAGES	RAWMAT	PRODUCTS	FORCE	CAPITAL
** SIZE GROUP 2												
PORTSMOUTH	1702	15	503	44	0	2	549	84682	97934	359062	110	114001
ALMONTE	2080	46	308	178	32	25	543	125708	435223	644900	530	326051
MERRITTON*	1000	10	191	113	62	63	429	96136	264060	596917	690	373500
GANANOQUE	2020	50	340	20	55	0	419	113860	282835	586570	759	207200
PORT PERRY*	1500	31	309	3	23	0	335	74810	93799	246405	295	90500
CARLETON PLACE	1205	31	279	26	28	0	333	77426	213975	362307	367	109250
SMITHS FALLS	1150	43	263	17	30	18	328	93241	238186	463668	451	138125
PERTH	2375	77	256	49	20	0	325	72956	134139	283116	174	119147
PICTON	2361	74	214	95	5	4	319	77064	116716	269344	76	93690
LONDON EAST*	1500	40	281	3	25	0	309	118714	936129	1843382	344	341200
HAWKESBURY	1671	39	229	24	45	3	301	53591	487224	673315	1767	145150
ST THOMAS	2197	72	209	69	15	0	293	74881	156823	338151	183	65175
BRAMPTON	2090	46	247	29	15	1	292	75919	229479	371680	92	112365
GEORGETOWN	1282	35	172	55	44	12	283	65368	254050	379318	329	107150
FERGUS	1666	42	234	37	9	1	281	85371	313060	509114	492	147835
TRENTON	1796	34	243	6	32	0	281	68976	190260	303313	156	78247
MITCHELL	1802	38	227	18	29	5	279	75946	207829	381865	187	96210
SEAFORTH	1368	48	193	35	18	10	256	57606	210525	349160	183	129100
PRESTON	1408	52	171	42	27	6	246	52080	242679	403138	153	149896
CALEDONIA	1246	42	162	36	23	0	221	61893	87069	189510	170	68922
WATERLOO	1594	52	180	19	20	1	220	60312	318827	606315	275	118835
SIMCOE	1856	57	171	24	13	4	212	58906	89321	202855	126	66705
NEWMARKET	1760	40	153	34	8	2	197	52084	262793	372770	237	78400
NEWCASTLE	1109	30	144	35	11	4	194	44671	102485	253535	97	36650
ARNPRIOR	1714	22	151	17	20	2	190	34974	129904	200511	355	91080
KINCARDINE	1907	46	152	19	18	0	189	45903	117191	243387	175	79450
ORILLIA	1322	35	148	12	22	0	182	47744	53633	121320	135	76890
OAKVILLE	1684	26	134	26	17	4	181	54056	71100	158853	117	105150
ORANGEVILLE	1458	48	143	18	12	0	173	40140	108510	200580	132	29330
THOROLD	1635	39	142	18	6	1	167	49973	282350	370006	330	60950
ELORA	1498	41	139	14	8	1	162	41760	354335	479358	240	119230
AURORA	1132	27	125	8	24	3	160	38681	93401	179650	128	56950
CLINTON	2016	26	140	9	8	2	159	50382	177865	275530	274	113300
YORKVILLE	2203	27	133	8	10	0	151	32616	56758	136565	53	75710
BRADFORD	1130	36	113	25	5	2	145	39345	115832	215750	87	78675
PORT DALHOUSIE	1081	20	122	13	8	0	143	48740	57630	133075	40	29815
MORRISBURG	1156	36	109	21	2	1	133	35486	248150	332807	112	48685
WELLAND	1130	37	117	9	6	0	132	31816	64934	126930	116	47595
PEMBROKE	1508	28	101	18	11	0	130	33140	95624	300000	134	49700
MEAFORD*	1200	41	107	7	14	0	128	25345	99985	198820	215	60576
CORNWALL	2033	22	86	27	5	8	126	31125	82562	141043	295	69410
UXBRIDGE*	1500	31	111	4	5	3	123	32010	97265	175310	373	57800
TILSONBURG*	1000	31	102	8	7	0	117	32970	72201	147206	214	48925
NEW HAMBURG	1003	26	107	4	5	0	116	20080	127659	192700	132	39195
AMHERSTBURG	1936	27	92	0	18	0	110	23072	106297	140915	148	40850
STAYNER*	1000	26	92	10	5	0	107	22270	89850	147772	170	31090
CAMPBELLFORD*	1000	23	64	23	13	4	104	21744	110974	154199	128	43385
DURHAM*	1250	43	91	5	3	0	99	25619	73056	128984	115	30846
AYLMER*	1400	29	84	9	4	0	97	22420	48747	100731	135	25200
DRESDEN*	1000	26	85	5	4	0	94	20520	45988	98331	138	23430
MOUNT FOREST	1370	23	86	4	4	0	94	23010	51850	97812	110	54950

SUMMARY OF INDUSTRIAL DATA FOR ONTARIO URBAN CENTRES, 1871

URBAN PLACE	POP	ESTAB	MEN	WOM	BOY	GIR	TOTEMP	WAGES	RAWMAT	PRODUCTS	FORCE	CAPITAL
DUNNVILLE	1452	17	78	3	7	0	88	22770	143994	209525	188	58400
WALKERTON*	1000	26	82	0	4	0	86	18553	23561	85966	227	41200
SANDWICH	1160	34	73	7	2	0	82	16473	95039	140387	92	33624
ASHBURNHAM	1197	19	59	2	9	3	73	19733	84770	129392	167	71750
EXETER*	1000	29	64	5	2	0	71	15905	34191	72600	104	31650
PARKHILL*	1500	25	59	1	6	0	66	14585	57540	83430	101	26285
BRIGHTON	1357	27	58	0	3	0	61	13125	35098	62540	35	12990
CLIFTON	1610	13	32	11	2	0	45	13510	24500	54222	28	35035
NIAGARA	1600	16	34	8	2	0	44	9351	14896	29226	16	4175
PENETANGUISHENE*	1000	8	26	0	1	0	27	5340	9450	22950	58	5200
** Subtotal **												
	90880	2100	9320	1389	891	195	11800	2896487	9522110	17078093	13860	5221780
** SIZE GROUP 1												
DESERONTO*	500	6	275	0	74	0	349	58310	97615	196854	150	64300
HESPELER	797	22	118	68	20	61	267	62015	264612	431303	416	145655
GARDEN ISLAND	762	2	175	0	20	0	195	50000	38000	180000	0	40000
MERRICKVILLE	923	32	123	38	24	2	187	45637	135911	199439	296	76175
LISTOWEL	976	35	130	16	15	3	164	29178	76878	131405	137	82650
LANARK	740	38	109	25	12	3	149	30550	109350	177242	52	70622
MILTON	891	30	105	17	5	0	127	38120	53925	125863	99	54420
RENFREW	865	41	123	2	0	0	125	28333	139170	213493	326	60670
IROQUOIS	781	31	110	10	0	0	120	27756	55218	108280	197	57150
ACTON*	700	23	97	7	13	0	117	34402	107631	180067	178	77900
WALKERVILLE*	200	2	112	0	0	0	112	48000	280155	1159597	89	50000
STIRLING	779	42	80	21	5	0	106	23544	75119	125910	119	26148
BOTHWELL	995	32	75	12	11	0	98	19890	55405	109528	138	34975
NEWBURGH	828	31	91	4	0	0	95	23361	70069	122800	202	47435
KEMPTVILLE	872	34	80	15	0	0	95	20212	56355	86625	116	29650
BLENHEIM*	850	18	77	3	9	0	89	16100	103220	149540	148	30625
ELMIRA*	850	27	72	6	8	0	86	14338	37894	76532	192	44280
COLBORNE	823	35	74	6	5	1	86	20348	34780	63865	79	19915
NEW EDINBURGH	596	5	42	31	8	2	83	21050	163180	240750	295	77800
GRIMSBY*	800	18	58	13	6	3	80	14175	32486	55968	103	28230
WARDSVILLE	539	32	67	9	1	0	77	10096	28194	59534	79	32749
WINGHAM*	700	26	66	4	5	0	75	13639	43950	88923	182	38420
EMBRO	484	28	58	13	1	1	73	17109	36831	168861	63	28470
CHIPPAWA	922	31	64	4	3	0	71	17932	88028	169466	66	32050
HARRISTON*	500	22	53	7	7	1	68	11586	39503	68101	122	18410
ALEXANDRIA*	800	24	53	15	0	0	68	12280	37450	62830	98	18820
SOUTHAMPTON	858	29	47	9	3	0	59	4984	31402	49140	130	12825
WALLACEBURG*	600	15	55	3	1	0	59	18956	72924	119771	152	42025
HOLLAND LANDING	649	20	54	1	3	0	58	9380	121255	151479	153	21490
BURLINGTON*	750	11	55	2	1	0	58	17408	74500	124240	65	25400
LEAMINGTON*	700	15	48	7	0	0	55	15290	35840	63124	114	19320
KINGSVILLE*	800	22	50	3	2	0	55	10560	12877	33781	70	13730
VIENNA	593	18	45	1	4	0	50	12695	25900	52160	100	23200
OIL SPRINGS	551	8	48	0	1	0	49	23970	22041	58225	16	24400
STREETSVILLE	617	19	35	6	1	4	46	3946	55887	72593	53	17659
PORT ELGIN*	700	16	39	0	7	0	46	7590	19013	46509	87	16075
BATH	601	23	36	7	2	0	45	6145	6000	20055	1	14065
VANKLEEK HILL*	700	16	45	0	0	0	45	9295	53308	80720	63	19550

SUMMARY OF INDUSTRIAL DATA FOR ONTARIO URBAN CENTRES, 1871

URBAN PLACE	POP	ESTAB	MEN	WOM	BOY	GIR	TOTEMP	WAGES	RAWMAT	PRODUCTS	FORCE	CAPITAL
ROCKLAND*	130	1	35	2	3	0	40	6500	18000	30000	75	20000
HANOVER*	700	20	39	0	1	0	40	10378	12059	31058	44	15975
WELLINGTON	517	18	37	1	1	0	39	8858	8422	30605	44	10800
RIDGETOWN*	500	15	28	4	5	1	38	4439	6675	24520	54	14900
RICHMOND	487	16	28	4	1	0	33	9585	11996	31172	20	7050
BRACEBRIDGE*	200	14	28	0	3	0	31	4785	7474	15900	59	9350
CHESLEY*	150	15	26	0	1	0	27	2761	56440	63527	198	16150
CAYUGA	803	10	19	3	2	0	24	5150	4050	11650	0	0
FORT ERIE	835	6	15	6	0	0	21	7750	7380	20900	4	9800
FOREST*	500	8	18	0	1	0	19	3550	50526	62830	70	13200
PORT COLBORNE	988	10	13	0	1	0	14	3480	6257	14440	6	3515
ALLISTON*	250	5	9	0	1	0	10	1918	2069	6853	1	1772
WIARTON*	200	5	8	0	0	0	8	1120	3675	6195	20	3100
** Subtotal **	33852	1022	3347	405	297	82	4131	918454	2986899	5974223	5541	1662870
*** Total ***	385795	6940	43431	8268	3867	1016	56587	15684566	41842325	77348036	40327	30847044

Appendix A-5 Urbanization quotients in size-classes of Ontario urban places, 1871

SECTOR	SIZE-CLASS	I 1000	II 1000-2499	III 2500-4999	IV 5000-9999	V 10000-24999	VI 25,000
1-4	EXTRACTION	7.233	0.844	1.457	-	-	-
5.01	FOOD etc.	1.015	0.957	1.059	1.161	1.147	0.841
5.02	TOBACCO	0.019	0.190	0.344	0.506	0.396	2.279
5.04	LEATHER	1.018	0.984	0.933	0.737	0.808	1.269
5.05	TEXTILES	2.726	2.215	1.358	0.367	0.074	0.727
5.06	KNITTING	-	0.029	2.536	0.284	-	1.697
5.07	CLOTHING	0.502	0.639	0.880	1.129	1.114	1.385
5.08	WOOD	1.802	1.391	1.042	0.568	1.787	0.280
5.09	FURNITURE	0.613	0.735	1.846	0.750	0.670	0.963
5.10	PAPER	-	3.265	0.350	-	0.216	0.868
5.11	PRINTING	0.288	0.519	0.617	0.588	1.760	1.673
5.12	PRIMARY METAL	0.819	0.866	0.919	1.337	0.432	1.323
5.13	METAL FABRICTG	0.523	0.911	0.790	1.473	1.114	1.079
5.14	MACHINERY	0.220	0.988	1.247	1.512	0.260	1.156
5.15	TRANSPTTN	1.406	1.253	0.898	1.767	1.257	0.292
5.17	NON-MET. MINS.	0.614	1.104	1.137	1.056	0.424	1.174
5.18	PETROL/COAL	1.022	0.620	3.095	0.945	-	0.251
5.19	CHEMICALS	0.986	0.832	0.774	1.359	0.970	1.143
5.20	MISCELL. MFG	0.047	0.176	0.424	0.888	1.473	2.138
6	CONSTRUCTION	0.242	0.467	0.716	1.216	1.337	1.561
7	UTILITIES	-	0.114	0.158	1.182	1.773	2.112
8	TRADE	0.606	1.130	1.232	1.710	1.150	0.439
10	SERVICES	2.083	1.506	1.160	0.806	0.721	0.416

SOURCE: URBIND7I databank, compiled from 1871 manuscript census schedules.

Appendix A-6 Ontario urban places by industrial status, 1871, grouped in types

URBAN PLACE	PERCENT	TOTEMP	POPULATION	MEN	WOM	BOY	GIR	SIZE	FACTY	MANUF	LEADEMP	CDISTRICT
** TYPE A												
HAMILTON	21.6	5775	26716	4347	765	545	118	6	24	11	984	HAMILTON
MERRICKVILLE	20.2	187	923	123	38	24	2	1	2	0	38	LEEDS N/GRENVILLE
TORONTO	18.9	10585	56092	7259	2244	754	328	6	50	38	561	TORONTO WEST
SEAFORTH	18.7	256	1368	193	35	18	10	2	2	0	40	HURON NORTH
CHESLEY	18.0	27	150	26	0	1	0	1	0	0	7	BRUCE NORTH
ST CATHARINES	17.9	1408	7864	1106	197	77	28	4	6	2	120	LINCOLN
CALEDONIA	17.7	221	1246	162	36	23	0	2	2	0	37	HALDIMAND
ACTON	16.6	117	700	97	7	13	0	1	0	0	21	HALTON
PETERBOROUGH	16.5	760	4611	618	108	26	8	3	3	0	150	PETERBOROUGH WEST
BRACEBRIDGE	15.5	31	200	28	0	3	0	1	0	0	5	MUSKOKA
IROQUOIS	15.4	120	781	110	10	0	0	1	0	0	17	DUNDAS
EMBRO	15.1	73	484	58	13	1	1	1	0	0	18	OXFORD NORTH
** Subtotal **												
		19560	101135	14127	3453	1485	495		89	51		
** TYPE B												
DESERONTO	69.8	349	500	275	0	74	0	1	1	1	311	HASTINGS EAST
WALKERVILLE	56.0	112	200	112	0	0	0	1	1	0	106	ESSEX
MERRITTON	42.9	429	1000	191	113	62	63	2	3	0	200	LINCOLN
HESPELER	33.4	267	797	118	68	20	61	1	2	0	163	WATERLOO SOUTH
PORTSMOUTH	32.3	549	1702	503	44	0	2	2	3	4	125	FRONTENAC
ROCKLAND	30.8	40	130	35	2	3	0	1	1	0	40	RUSSELL
SMITHS FALLS	28.5	328	1150	263	17	30	18	2	3	0	74	LANARK SOUTH
CARLETON PLACE	27.6	333	1205	279	26	28	0	2	2	0	163	LANARK SOUTH
ALMONTE	26.1	543	2080	308	178	32	25	2	4	0	209	LANARK NORTH
GARDEN ISLAND	25.6	195	762	175	0	20	0	1	0	1	156	FRONTENAC
OSHAWA	23.0	732	3185	624	66	40	2	3	2	0	266	ONTARIO SOUTH
PORT PERRY	22.3	335	1500	309	3	23	0	2	4	0	55	ONTARIO NORTH
GEORGETOWN	22.1	283	1282	172	55	44	12	2	2	0	70	HALTON
DUNDAS	21.8	683	3135	445	146	55	37	3	4	1	143	WENTWORTH NORTH
GALT	20.7	791	3827	635	104	43	9	3	5	2	203	WATERLOO SOUTH
GANANOQUE	20.7	419	2020	340	20	55	0	2	5	0	66	LEEDS SOUTH
LANARK	20.0	149	740	109	25	12	3	1	2	0	50	LANARK NORTH
LONDON EAST	20.0	309	1500	281	3	25	0	2	1	1	50	MIDDLESEX EAST
HAWKESBURY	18.0	301	1671	229	24	45	3	2	1	0	168	PRESCOTT
NEWCASTLE	17.5	194	1109	144	35	11	4	2	2	0	61	DURHAM WEST
PRESTON	17.4	246	1408	171	42	27	6	2	1	0	67	WATERLOO SOUTH
PARIS	17.3	456	2640	325	109	19	3	3	4	1	75	BRANT NORTH
FERGUS	16.9	281	1666	234	37	9	1	2	1	0	75	WELLINGTON CENTRE
LISTOWEL	16.8	164	976	130	16	15	3	1	0	0	25	PERTH NORTH
BROCKVILLE	16.6	848	5102	663	121	60	4	4	3	2	160	BROCKVILLE
GUELPH	16.6	1143	6878	876	183	80	4	4	7	6	180	WELLINGTON SOUTH
INGERSOLL	15.6	627	4022	547	45	35	0	3	5	0	103	OXFORD SOUTH
TRENTON	15.6	281	1796	243	6	32	0	2	1	0	170	HASTINGS WEST
MITCHELL	15.5	279	1802	227	18	29	5	2	1	0	106	PERTH SOUTH
BRANTFORD	15.5	1253	8107	1013	164	58	18	4	4	4	315	BRANT SOUTH
OTTAWA	14.8	3224	21745	2592	490	117	25	5	11	9	300	OTTAWA
** Subtotal **												
		16143	85637	12568	2160	1103	308		86	32		

ONTARIO URBAN PLACES BY INDUSTRIAL STATUS, 1871

URBAN PLACE	PERCENT	TOTEMP	POPULATION	MEN	WOM	BOY	GIR	SIZE	FACTY	MANUF	LEADEMP	CDISTRICT
** TYPE C												
AURORA	14.1	160	1132	125	8	24	3	2	1	0	55	YORK NORTH
BRAMPTON	14.0	292	2090	247	29	15	1	2	1	0	93	PEEL
NEW EDINBURGH	13.9	83	596	42	31	8	2	1	1	0	58	RUSSELL
ORILLIA	13.7	182	1322	148	12	22	0	2	1	0	53	SIMCOE NORTH
PICTON	13.5	319	2361	214	95	5	4	2	0	0	25	PRINCE EDWARD
BOWMANVILLE	13.3	404	3034	284	91	29	0	3	1	0	175	DURHAM WEST
PORT DALHOUSIE	13.2	143	1081	122	13	8	0	2	1	1	60	LINCOLN
ST MARYS	12.9	403	3120	254	115	27	7	3	2	1	48	PERTH SOUTH
BARRIE	12.1	411	3398	371	12	26	2	3	2	0	56	SIMCOE NORTH
BERLIN	11.6	318	2743	256	27	15	20	3	4	0	44	WATERLOO NORTH
COLLINGWOOD	11.5	328	2829	289	24	15	0	3	1	0	133	SIMCOE NORTH
PORT HOPE	11.1	570	5114	398	144	17	11	4	1	3	48	DURHAM EAST
ARNPRIOR	11.1	190	1714	151	17	20	2	2	1	0	100	RENFREW SOUTH
STAYNER	10.7	107	1000	92	10	5	0	2	1	0	30	SIMCOE NORTH
OAKVILLE	10.7	181	1684	134	26	17	4	2	1	0	40	HALTON
CAMPBELLFORD	10.4	104	1000	64	23	13	4	2	1	0	40	NORTHUMBERLAND EAST
GODERICH	9.8	389	3954	307	33	46	3	3	2	0	60	HURON SOUTH
** Subtotal **												
		4584	38172	3498	710	312	63		22	5		
** TYPE D												
LONDON	14.5	2296	15826	1800	315	156	25	5	13	12	122	LONDON
RENFREW	14.4	125	865	123	2	0	0	1	0	0	9	RENFREW SOUTH
MILTON	14.2	127	891	105	17	5	0	1	0	0	20	HALTON
WATERLOO	13.8	220	1594	180	19	20	1	2	1	0	31	WATERLOO NORTH
PERTH	13.7	325	2375	256	49	20	0	2	1	0	28	LANARK SOUTH
STIRLING	13.6	106	779	80	21	5	0	1	1	0	8	HASTINGS NORTH
STRATHROY	13.6	440	3232	348	35	50	7	3	1	0	57	MIDDLESEX WEST
ST THOMAS	13.3	293	2197	209	69	15	0	2	0	1	30	ELGIN EAST
NAPANEE	12.9	383	2967	305	59	19	0	3	2	0	30	LENNOX
BRADFORD	12.8	145	1130	113	25	5	2	2	0	0	22	SIMCOE SOUTH
STRATFORD	12.6	544	4313	380	111	43	10	3	3	1	50	PERTH NORTH
CHATHAM	12.4	731	5873	647	46	30	8	4	5	1	42	KENT
BELLEVILLE	12.1	886	7305	743	109	31	3	4	5	0	95	HASTINGS WEST
ORANGEVILLE	11.9	173	1458	143	18	12	0	2	0	0	9	WELLINGTON CENTRE
PRESCOTT	11.7	307	2617	218	66	21	2	3	1	0	38	GRENVILLE SOUTH
WELLAND	11.7	132	1130	117	9	6	0	2	0	0	14	WELLAND
TILSONBURG	11.7	117	1000	102	8	7	0	2	0	0	22	OXFORD SOUTH
NEW HAMBURG	11.6	116	1003	107	4	5	0	2	0	0	24	WATERLOO SOUTH
MORRISBURG	11.5	133	1156	109	21	2	1	2	0	0	10	DUNDAS
SIMCOE	11.4	212	1856	171	24	13	4	2	0	0	25	NORFOLK NORTH
COBOURG	11.3	502	4442	360	82	43	17	3	2	1	112	NORTHUMBERLAND WEST
NEWMARKET	11.2	197	1760	153	34	8	2	2	0	0	14	YORK NORTH
WOODSTOCK	11.2	445	3982	390	31	22	2	3	4	0	33	OXFORD NORTH
LINDSAY	11.1	449	4049	328	86	31	4	3	0	1	27	VICTORIA SOUTH
ELORA	10.8	162	1498	139	14	8	1	2	1	0	30	WELLINGTON CENTRE
MEAFORD	10.7	128	1200	107	7	14	0	2	0	0	18	GREY NORTH
KINGSTON	10.7	1330	12407	1017	198	93	22	5	6	0	173	KINGSTON
THOROLD	10.1	167	1635	142	18	6	1	2	0	0	20	WELLAND
KINCARDINE	9.9	189	1907	152	19	18	0	2	0	0	12	BRUCE SOUTH

ONTARIO URBAN PLACES BY INDUSTRIAL STATUS, 1871

URBAN PLACE	PERCENT	TOTEMP	POPULATION	MEN	WOM	BOY	GIR	SIZE	FACTY	MANUF	LEADEMP	CDISTRICT
OWEN SOUND	9.7	326	3369	275	36	15	0	3	0	0	22	GREY NORTH
WHITBY	9.0	244	2732	205	30	9	0	3	1	0	50	ONTARIO SOUTH
PEMBROKE	8.6	130	1508	101	18	11	0	2	0	0	22	RENFREW NORTH
UXBRIDGE	8.2	123	1500	111	4	5	3	2	0	0	12	ONTARIO NORTH
CLINTON	7.9	159	2016	140	9	8	2	2	0	0	24	HURON NORTH
SARNIA	7.6	222	2929	176	34	10	2	3	0	0	16	LAMBTON
PETROLIA	7.1	188	2651	167	16	4	1	3	0	0	20	LAMBTON
YORKVILLE	6.8	151	2203	133	8	10	0	2	0	0	22	YORK EAST
CORNWALL	6.2	126	2033	86	27	5	8	2	0	0	22	CORNWALL
WINDSOR	6.0	255	4253	196	32	18	9	3	0	0	15	ESSEX
AMHERSTBURG	5.7	110	1936	92	0	18	0	2	0	0	20	ESSEX
** Subtotal **												
		13414	119577	10726	1730	821	137		47	17		
** TYPE Z												
WARDSVILLE	14.3	77	539	67	9	1	0	1	0	0	7	MIDDLESEX WEST
HARRISTON	13.6	68	500	53	7	7	1	1	0	0	8	WELLINGTON NORTH
NEWBURGH	11.5	95	828	91	4	0	0	1	0	0	9	ADDINGTON
KEMPTVILLE	10.9	95	872	80	15	0	0	1	0	0	8	LEEDS N/GRENVILLE
WINGHAM	10.6	75	700	66	4	5	0	1	0	0	8	HURON NORTH
BLENHEIM	10.5	89	850	77	3	9	0	1	0	0	17	KENT
COLBORNE	10.4	86	823	74	6	5	1	1	0	0	12	NORTHUMBERLAND EAST
ELMIRA	10.1	86	850	72	6	8	0	1	0	0	22	WATERLOO NORTH
GRIMSBY	10.0	80	800	58	13	6	3	1	0	0	24	LINCOLN
WALLACEBURG	9.8	59	600	55	3	1	0	1	0	0	12	KENT
BOTHWELL	9.8	98	995	75	12	11	0	1	0	0	10	BOTHWELL
DRESDEN	9.4	94	1000	85	5	4	0	2	0	0	16	BOTHWELL
OIL SPRINGS	8.9	49	551	48	0	1	0	1	0	0	13	LAMBTON
HOLLAND LANDING	8.9	58	649	54	1	3	0	1	0	0	16	YORK NORTH
WALKERTON	8.6	86	1000	82	0	4	0	2	0	0	7	BRUCE SOUTH
ALEXANDRIA	8.5	68	800	53	15	0	0	1	0	0	8	GLENGARRY
VIENNA	8.4	50	593	45	1	4	0	1	0	0	7	ELGIN EAST
LEAMINGTON	7.9	55	700	48	7	0	0	1	0	0	12	ESSEX
DURHAM	7.9	99	1250	91	5	3	0	2	0	0	22	GREY SOUTH
BURLINGTON	7.7	58	750	55	2	1	0	1	0	0	25	HALTON
CHIPPAWA	7.7	71	922	64	4	3	0	1	0	0	23	WELLAND
RIDGETOWN	7.6	38	500	28	4	5	1	1	0	0	7	BOTHWELL
WELLINGTON	7.5	39	517	37	1	1	0	1	0	0	8	PRINCE EDWARD
BATH	7.5	45	601	36	7	2	0	1	0	0	11	LENNOX
STREETSVILLE	7.4	46	617	35	6	1	4	1	0	0	5	PEEL
SANDWICH	7.1	82	1160	73	7	2	0	2	0	0	15	ESSEX
EXETER	7.1	71	1000	64	5	2	0	2	0	0	8	HURON SOUTH
AYLMER	6.9	97	1400	84	9	4	0	2	0	0	11	ELGIN EAST
MOUNT FOREST	6.9	94	1370	86	4	4	0	2	0	0	17	WELLINGTON NORTH
SOUTHAMPTON	6.9	59	858	47	9	3	0	1	0	0	9	BRUCE NORTH
KINGSVILLE	6.9	55	800	50	3	2	0	1	0	0	5	ESSEX
RICHMOND	6.8	33	487	28	4	1	0	1	0	0	4	CARLETON
PORT ELGIN	6.6	46	700	39	0	7	0	1	0	0	8	BRUCE NORTH
VANKLEEK HILL	6.4	45	700	45	0	0	0	1	0	0	10	PRESCOTT
DUNNVILLE	6.1	88	1452	78	3	7	0	2	0	0	10	MONCK
ASHBURNHAM	6.1	73	1197	59	2	9	3	2	0	0	11	PETERBOROUGH EAST

ONTARIO URBAN PLACES BY INDUSTRIAL STATUS, 1871

URBAN PLACE	PERCENT	TOTEMP	POPULATION	MEN	WOM	BOY	GIR	SIZE	FACTY	MANUF	LEADEMP	CDISTRICT
HANOVER	5.7	40	700	39	0	1	0	1	0	0	5	GREY SOUTH
BRIGHTON	4.5	61	1357	58	0	3	0	2	0	0	7	NORTHUMBERLAND EAST
PARKHILL	4.4	66	1500	59	1	6	0	2	0	0	8	MIDDLESEX NORTH
WIARTON	4.0	8	200	8	0	0	0	1	0	0	3	BRUCE NORTH
ALLISTON	4.0	10	250	9	0	1	0	1	0	0	4	SIMCOE SOUTH
FOREST	3.8	19	500	18	0	1	0	1	0	0	5	LAMBTON
CAYUGA	3.0	24	803	19	3	2	0	1	0	0	5	HALDIMAND
CLIFTON	2.8	45	1610	32	11	2	0	2	0	0	9	WELLAND
PENETANGUISHENE	2.7	27	1000	26	0	1	0	2	0	0	16	SIMCOE NORTH
NIAGARA	2.7	44	1600	34	8	2	0	2	0	0	9	NIAGARA
FORT ERIE	2.5	21	835	15	6	0	0	1	0	0	9	WELLAND
PORT COLBORNE	1.4	14	988	13	0	1	0	1	0	0	5	WELLAND
** Subtotal **												
		2886	41274	2512	215	146	13		0	0		
*** Total ***												
		56587	385795	43431	8268	3867	1016		244	105		

Appendix A-7 TYPE B AND TYPE C URBAN PLACES BY LEADING INDUSTRIAL SECTOR

URBAN PLACE	PERCENT	POPULATION	TOTEMP	TYPE	FACTY	MANUF	LEADSEC	LEAD%	PRIMEMP	SECTOR
GARDEN ISLAND	25.6	762	195	B	0	1	2.00	80.0	156	RAFT BUILDING
WALKERVILLE	56.0	200	112	B	1	0	5.01	95.0	106	DISTILLERY
GEORGETOWN	22.1	1282	283	B	2	0	5.04	27.3	70	TANNERY
ALMONTE	26.1	2080	543	B	4	0	5.05	63.7	209	WOOLEN MILLS
MERRITTON	42.9	1000	429	B	3	0	5.05	47.0	200	COTTON MILLS
PRESTON	17.4	1408	246	B	1	0	5.05	34.1	67	WOOLEN MILL
HESPELER	33.4	797	267	B	2	0	5.05	79.0	163	WOOLEN MILL
LISTOWEL	16.8	976	164	B	0	0	5.05	25.6	25	FLAX MILL
LANARK	20.0	740	149	B	2	0	5.05	36.9	50	WOOLEN MILL
CAMPBELLFORD	10.4	1000	104	C	1	0	5.05	53.0	40	WOOLEN MILL
NEW EDINBURGH	13.9	596	83	C	1	0	5.05	69.9	58	WOOLEN MILL
PARIS	17.3	2640	456	B	4	1	5.06	27.9	75	HOSIERY MILL
PORT HOPE	11.1	5114	570	C	1	3	5.07	31.2	48	CLOTHING
ST MARYS	12.9	3120	403	C	2	1	5.07	27.5	48	CLOTHING
PICTON	13.5	2361	319	C	0	0	5.07	34.2	25	CLOTHING
OTTAWA	14.8	21745	3224	B	11	9	5.08	41.9	300	SAWMILLS
PORT PERRY	22.3	1500	335	B	4	0	5.08	50.0	55	SAWMILL
CARLETON PLACE	27.6	1205	333	B	2	0	5.08	70.6	163	SAWMILL
HAWKESBURY	18.0	1671	301	B	1	0	5.08	66.1	168	SAWMILL
TRENTON	15.6	1796	281	B	1	0	5.08	61.2	170	SAWMILL
DESERONTO	69.8	500	349	B	1	1	5.08	89.0	311	SAWMILL
ROCKLAND	30.8	130	40	B	1	0	5.08	100.0	40	SAWMILL
BARRIE	12.1	3398	411	C	2	0	5.08	37.8	56	SAWMILL
GODERICH	9.8	3954	389	C	2	0	5.08	28.0	60	SAWMILL
COLLINGWOOD	11.5	2829	328	C	1	0	5.08	47.9	133	SAWMILL
ARNPRIOR	11.1	1714	190	C	1	0	5.08	59.5	100	SAWMILL
ORILLIA	13.7	1322	182	C	1	0	5.08	52.2	53	SAWMILL
STAYNER	10.7	1000	107	C	1	0	5.08	35.5	30	SAWMILL
BOWMANVILLE	13.3	3034	404	C	1	0	5.09	43.6	175	FURNITURE
BERLIN	11.6	2743	318	C	4	0	5.09	25.8	44	FURNITURE
BROCKVILLE	16.6	5102	848	B	3	2	5.13	29.5	160	METAL FABRICATG
GANANOQUE	20.7	2020	419	B	5	0	5.13	36.0	66	METAL FABRICATG
GUELPH	16.6	6878	1143	B	7	6	5.14	32.4	180	MACHINERY
GALT	20.7	3827	791	B	5	2	5.14	29.5	203	MACHINERY
OSHAWA	23.0	3185	732	B	2	0	5.14	36.5	266	MACHINERY
DUNDAS	21.8	3135	683	B	4	1	5.14	29.4	143	MACHINERY
INGERSOLL	15.6	4022	627	B	5	0	5.14	29.3	103	MACHINERY
SMITHS FALLS	28.5	1150	328	B	3	0	5.14	43.3	74	MACHINERY
FERGUS	16.9	1666	281	B	1	0	5.14	37.0	75	MACHINERY
MITCHELL	15.5	1802	279	B	1	0	5.14	40.1	106	MACHINERY
NEWCASTLE	17.5	1109	194	B	2	0	5.14	31.4	61	MACHINERY
BRAMPTON	14.0	2090	292	C	1	0	5.14	32.5	93	MACHINERY
AURORA	14.1	1132	160	C	1	0	5.14	35.0	55	MACHINERY
BRANTFORD	15.5	8107	1253	B	4	4	5.15	30.2	315	RAILWAY SHOPS
OAKVILLE	10.7	1684	181	C	1	0	5.15	28.7	40	CARRIAGE MAKING
PORT DALHOUSIE	13.2	1081	143	C	1	1	5.15	74.1	60	BOAT BUILDING
LONDON EAST	20.0	1500	309	B	1	1	5.18	60.0	50	OIL REFINING
PORTSMOUTH	32.3	1702	549	B	3	4	6.00	28.0	125	STONE MASONRY
*** Total ***										
		123809	20727		108	37				

Appendix A-8 Factories in Ontario urban places, 1871, ranked by number employed

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0024	B-3	GREAT WESTERN RLW	RL CARS/LOCOMOTIV	326	.	STEAM	.	984	500000	.	.	.
0046	A-3	NORTHERN RAILWAY	RAILWAY WORK SHOP	326	6568000	STEAM	139	561	215808	34533	.	.
0046	A-1	SESSIONS/TURNER/C	BOOTS/SHOE MF	174	30000	STEAM	15	510	100000	180000	300000	120000
0046	A-1	HAY R & CO	CABINETS/UPHOLSTE	261	400000	STEAM	40	430	120000	350000	500000	150000
0015	D-1	GRAND TRUNK RAILW	REPAIR SHOP	326	435000	STEAM	30	315	182000	82000	326000	244000
0061	B-1	RATHBUN H B & S	SAW MILL	251	50000	STEAM	150	311	39250	77900	140754	62854
0077	B-2	BRONSON & WESTON	SAW MILL	251	350000	WATER	2500	300	70000	240000	360000	120000
0024	E-2	WANZER R M & C	SEWING MACHINE MF	315-S	58000	STEAM	40	275	86000	65000	210000	145000
0077	B-2	BALDWIN A H	SAW MILL	251	90000	WATER	250	274	50000	180000	276000	96000
0048	E-2	HALL JOSEPH & CO	ENGINES/AGRC IMPL	315-E/311	200000	STEAM	50	266	125000	56600	300000	243400
0024	E-2	KEMPSTER C W & T	BUILDER/CONTRACTO	351-B/421-B	25000	STEAM	32	250	75000	21500	103500	82000
0077	B-2	PERLEY & PATTEE	SAW MILL	251	150000	WATER	500	250	70000	240000	330000	90000
0046	A-3	THOMPSON SMITH &	SAW MILL	251	.	W/S	200	240	72000	.	135000	.
0046	C-1	DICKEY NEIL &	ENGINES/FOUNDRY	315-E/326	120000	STEAM	50	230	80000	112900	275600	162700
0024	B-3	HAMILTON ROLLING	ROLLING MILLS	291-R	70000	STEAM	400	225	80000	410000	680000	270000
0080	B	ROSAMOND B & W &	WOOLEN FACTORY	182	200000	WATER	160	209	48600	270000	350000	80000
0031	D-3	GOLDIE/MCCULLOCH/	ENGINE/MACHINE WO	315-E/315	100000	STEAM	50	203	65000	27700	180000	152300
0046	A-1	HENDERSON & BOSTW	HAT/BONNET MF	249-H	50000	STEAM	15	201	14400	24700	80000	55300
0021	A-3	GORDON & MACKAY	LYBSTER COTTON MI	181	150000	WATER	250	200	36000	66000	150000	84000
0047	A-3	HAMILTON WILLIAM	FOUNDRY/MACHINE S	315/326	100000	STEAM	60	200	100000	35000	620000	585000
0047	A-4	GZOWSKI C & CO	ROLLING MILL	291-R	100000	STEAM	250	200	72000	387000	500000	113000
0077	B-2	BOOTH JAMES R	SAW MILL	251	400000	WATER	250	200	60000	180000	250000	70000
0047	A-1	DAMER KING & CO	BOOT/SHOE FACTORY	174	20000	STEAM	15	191	52000	150000	250000	100000
0048	E-2	GIBBS WM H	CABINET FACTORY	261	60000	STEAM	50	181	55000	100000	165000	65000
0033	C-3	GUELPH SEWING M C	SEWING MACHINE FC	315-S	65000	STEAM	12	180	75000	62000	204800	142800
0024	E-2	MCPHERSON JOHN &	BOOT/SHOE MF	174	70000	STEAM	25	175	50000	120000	200000	80000
0050	B-1	MCARTHUR F F	FURNITURE MF CO	261	50000	STEAM	40	175	58000	50000	135000	85000
0046	B-1	HUNTER & ROSE & C	PRINTER/BINDERY	286/287-B	40000	STEAM	25	173	48000	50000	160000	110000
0066	F	CANADIAN ENGINE C	RAILWAY CARS/ENGI	326/315-E	200000	STEAM	20	173	75000	200988	306000	105012
0060	B	GILMOUR & CO	SAW MILL	251	60000	STEAM	110	170	36000	154000	220000	66000
0075	C	HAMILTON BROS	SAW MILL	251	100000	WATER	1500	168	27000	400000	540000	140000
0031	G	RANDALL & FARR &	WORSTED/WOOLEN MI	182	77000	WATER	100	163	35000	140000	200000	60000
0079	J	GILLIES & MCLAREN	SAW MILL	251	20000	WATER	120	163	35000	75000	120000	45000
0068	B	SMART JAMES	FOUNDRY	309/307-S	32000	STEAM	32	160	45000	50000	140000	90000
0047	A-3	GOODERHAM & WORTS	DISTILLERY	109-D	350000	STEAM	116	150	60000	450000	1470000	1020000
0056	C-1	DICKSON S	SAW MILL	251	50000	WATER	16	150	36250	42000	75000	33000
0023	C-2	YOUNG & LAW & CO	COTTON FACTORY	181	250000	W/S	90	143	29500	110000	200000	90000
0077	C-1	TAYLOR ISAAC B	PRINTING EST	289	50000	STEAM	25	140	50000	40000	113397	73397
0042	B	HOTCHKISS & PECKH	SAW MILL	251	30000	STEAM	150	133	26000	54000	120000	66000
0024	A-1	WILSON BOWMAN & C	SEWING MACHINE MF	315-S	8000	STEAM	15	131	60000	50000	200000	150000
0047	A-1	BARKER GEORGE	STRAW HAT FACTORY	249-H	10000	STEAM	8	130	20000	30000	62000	32000
0046	A-1	CAMPBELL J & SONS	PUBLISHER/BINDERY	289/287-B	25000	STEAM	15	126	25000	60000	100000	40000
0021	B-1	TUTTLE DATE & ROD	AGRC HAND TOOLS	306	75000	WATER	350	120	55000	36000	137000	101000
0024	C-2	BECKETT F G & C	ENGINE/BOILER MF	315-E/301	100000	STEAM	50	120	40000	40000	100000	60000
0015	D-2	WATEROUS C H & C	ENGINES/MACHINERY	315-E/315	57000	STEAM	40	118	40573	19700	120000	100300
0054	B-3	FRASER & CO	WOOLEN MILL	182	60000	W/S	80	112	25000	72000	120000	48000
0001	J-2	WALKER HIRAM	DISTILLER/MALSTER	109-D	47200	STEAM	45	106	45700	240000	1114982	874982
0029	E-3	THOMPSON & WILLIA	AGRC WORKS/ENGINE	311/315-E	25000	STEAM	30	106	40000	50000	150000	100000
0015	D-1	BUCK WILLIAM	IRON FOUNDRY	307-S/311	35000	STEAM	50	105	30000	32500	70000	37500
0013	F-2	NOXON BROS	FOUNDRY	311/315	70000	STEAM	60	103	42000	50500	111400	60900
0024	D-1	GURNEY E & C	IRON FOUNDER	307-S/294	20000	STEAM	20	101	45000	45200	140000	94800

FACTORIES WITH 51+ EMPLOYED IN URBAN ONTARIO, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0021	A-3	RIORDAN JOHN	PAPER MILLS	271	156000	WATER	200	100	30000	70000	160000	90000
0046	B-1	BURKE WILLIAM	SASH/BLIND FACTOR	254	10000	STEAM	60	100	26000	15000	51250	36250
0047	A-1	BEARD BROS & CO	CANADIAN STOVE WO	307-S	2000	STEAM	15	100	25000	46100	250000	203900
0077	B-2	YOUNG LEVI	SAW MILL	251	100000	WATER	100	100	20000	150000	182000	32000
0081	B	MCLAUGHLIN BROS	SAW MILL	251	50000	WATER	260	100	15000	90000	110000	20000
0046	A-1	ROBERTSON & COOK	PRINTING OFFICE	289	50000	STEAM	10	95	70000	100000	200000	100000
0060	C-3	RATHBUN H B	SAW/SASH MILL	251/254	.	STEAM	.	95	17000	45000	81000	36000
0039	E-2	HAGGERT BROS	FOUNDRY/AGRC IMPL	311/307-S	30000	STEAM	20	93	31500	50500	103500	53000
0047	B-1	GURNEY E & C	FOUNDRY	307-S/294	36000	STEAM	25	93	25000	27000	75000	48000
0024	D-2	SAWYER S D & C	AGRC IMPLEMENTS	311	10000	STEAM	22	90	45000	73000	125000	52000
0046	D-3	MCBANE JAMES	CARPENTER/DOOR FC	254	12000	STEAM	25	88	20000	4800	30000	25200
0024	C-2	RUTHERFORD H & CO	GLASS MANUFACTURE	356	15000	STEAM	10	83	42500	20050	85000	64950
0021	B-1	SHICKLUNA LEWIS	SHIP BUILDING YAR	327	20000	WATER	50	82	25000	15000	48000	33000
0023	C-2	MCKECHNIE & BERTR	CANADA TOOL WORKS	315-M/315	30000	STEAM	35	80	30000	11640	60000	48360
0047	A-1	BEATY JAMES	PUBLISHING/PRINTE	289	165000	STEAM	20	80	60000	100000	250000	150000
0047	A-2	SCALES J & CO	TOBACCO WORKS	153	25000	STEAM	16	80	13500	85000	105000	20000
0046	D-3	SIMPSON JAMES	KNITTING FACTORY	239	10000	STEAM	20	77	14000	21000	50000	29000
0023	C-2	WILSON THOMAS & C	DUNDAS FOUNDRY	315-E/301	14000	W/S	60	76	19167	27237	55000	27763
0016	C-2	PENMAN JOHN	KNITTING FACTORY	239	23000	WATER	40	75	13000	40000	85000	45000
0021	A-3	WAIT WILLIAM	COTTON MILLS	181	30000	WATER	120	75	11000	55000	75000	20000
0034	D	LOCKMAN & WILSON/	SEWING MACHINES	315-S	15000	STEAM	25	75	22000	20000	75000	55000
0065	B-2	PROV HARDWARE MF	HARDWARE MANUFACT	309-S/306	8000	STEAM	25	75	20000	18000	50000	32000
0024	D-2	GALBRAITH & GREEN	FELT HAT WORKS	249-H	50000	STEAM	30	74	21025	17500	60000	42500
0079	B	FROST & WOOD	FOUNDRY/AGRC IMPL	311/315	28000	STEAM	30	74	26000	55000	115000	60000
0010	C-1	MCCLARY J & O	FOUNDRY	307-S/311	50000	STEAM	25	73	30000	60000	100000	40000
0013	F-2	EASTWOOD & CO	AGRC IMPLEMENT MF	311/315	30000	STEAM	16	70	28000	51860	101000	49140
0024	A-1	GARDNER & CO	SEWING MACHINE MF	315-S	6000	STEAM	20	70	8000	25000	100000	75000
0033	C-3	RAYMOND CHARLES	SEWING MACHINE FC	315-S	25000	STEAM	15	70	30000	42000	85000	43000
0038	G	DAYFOOT JOHN B	TANNERY/BOOTS/SHO	172/174	3000	WATER	15	70	12000	22000	40000	18000
0077	C-1	CURRIER T M & CO	SASH/BLIND/DOOR M	254	35000	STEAM	50	70	32000	50000	85000	35000
0010	C-1	MOORHEAD GEORGE	CABINET MANUFACTO	261	100000	STEAM	10	68	30000	40000	150000	110000
0066	F	POWER WILLIAM & C	SHIP YARD	327	35000	STEAM	25	68	21500	12000	40000	28000
0031	F	CROMBIE JAMES	WOOLEN FACTORY	182	60000	WATER	6	67	12000	75000	120000	45000
0067	B	BYERS W & MATTHEW	AXLE FACTORY	329-P	30000	WATER	50	66	20000	28000	70000	42000
0080	B	ELLIOTT/ROUTH/SHE	WOOLEN MANUFACTUR	182	45000	WATER	50	66	14988	42149	75000	32851
0079	B	COSSITT & BRO	FOUNDRY/AGRC IMPL	311/315	50000	WATER	60	65	25000	27700	107000	79300
0046	A-2	WALLACE HUGH &	TOBACCO MANUFACTO	153	1400	WATER	.	64	10400	24960	25000	40
0047	A-1	COPP CLARK & CO	PUBLISHER/PRINTER	289	12500	STEAM	10	64	21000	20000	60000	40000
0024	B-1	STEWART JAMES &	IRON FOUNDRY	307-S/294	20000	STEAM	15	63	20000	39500	90000	50500
0046	A-2	SMITH & WYATT	SAW MILL	251	60000	STEAM	8	62	26000	40000	65000	25000
0016	C-2	COLEMAN THOMAS	PLASTER MILL	359-P	23000	WATER	54	61	8000	18000	32000	14000
0050	E	MASSEY MF CO	AGRC IMPLEMENTS	311	20000	STEAM	30	61	20000	18845	80000	61155
0021	B-4	MCKINLEY R & CO	CARRIAGE WOODWORK	329-P	26000	STEAM	40	60	21000	30000	85000	55000
0024	B-2	COPP ANTHONY & WM	IRON FOUNDRY	311/307-S	40000	STEAM	16	60	23000	24800	62000	37200
0025	G-3	STANDLY & CO	SAW MILL/STAVE FC	251	20000	STEAM	40	60	12000	30500	48000	17500
0046	A-1	SMITH J B	SASH/BLIND FACTOR	254	10000	STEAM	35	60	18110	40000	50000	10000
0046	D-3	WILLIAM R S	MELODEON EST	399-P	30000	STEAM	20	60	30000	35000	80000	45000
0076	F	BLACKBURN & MCLAR	WOOLEN FACTORY	182	35000	WATER	200	58	14400	60000	80000	20000
0007	F	SCOON J A	STRATHROY WOOLEN	182	46000	STEAM	35	57	13000	54000	90000	36000
0042	E-2	ROBINSON J S	STAVE FACTORY	259-C	10000	STEAM	16	56	30000	6000	37000	31000
0010	D	CAMERON J & BROS	PUBLISHER/PRINTER	289	10000	STEAM	8	55	12000	12000	30000	18000

FACTORIES WITH 51+ EMPLOYED IN URBAN ONTARIO, 1871

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0043	C	FLEURY JOSEPH	AGRC IMPLEMENT MF	311	12000	STEAM	20	55	18000	28760	63280	34520
0047	B-1	WILLIAMS R S	ORGAN/MELODEON MF	399-P	20000	STEAM	20	55	8000	20000	60000	40000
0049	B-3	PAXTON & TATE & C	IRON FOUNDRY	311/315	20000	STEAM	30	55	20000	14000	65000	51000
0067	B	JONES D FORD & CO	SHOVEL/FORK FACTO	306	50000	WATER	150	55	15000	55000	80000	25000
0050	E	BRODIE ROBERT	WOOLEN MF CO	182	11000	STEAM	35	54	11500	40000	90000	50000
0066	G	ROWLANDS & HOFLER	PIANO MANUFACTORY	399-P	5000	STEAM	10	54	24000	50000	56250	6250
0042	L	OLIVER & CO	SAW/PLANING MILL	251/254	40000	STEAM	60	53	20000	10000	30000	20000
0047	A-1	CURRIE NEIL	BOILER WORKS	301	6000	STEAM	12	53	21000	15800	45000	29200
0049	B-3	BIGELOW & TROUNCE	SAW MILL	251	4500	STEAM	40	53	6000	8350	16000	7650
0077	E-2	MCLAREN J & CO	SAW MILL	251	40000	WATER	100	53	18000	80000	150000	70000
0016	C-1	ADAMS & HACKLAN	WOOLEN MANUFACTUR	239	15000	WATER	16	52	10800	38880	81000	42120
0047	A-3	CONSUMERS GAS CO	GAS WORKS	574	400000	STEAM	10	51	19000	33000	124000	91000
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					14047600		11230	15427	4897471	8494652	18439713	9844594

Appendix A-9 Manufactories in Ontario urban places, 1871, ranked by number employed

CDID	CED	PROPRIOR	TYPEEST	SIC	FIXCAP	TYPEPOW	FORCE	TOTEMP	WAGES	SUMRAWC	SUMPROC	VADD
0024	E-2	SANFORD & MCINNES	CLOTHING MF	242	40000		.	455	60000	250000	350000	100000
0047	A-1	CHILDS & HAMILTO	BOOT/SHOE FACTORY	174	40000		.	192	65000	85000	160000	75000
0065	C	CALVIN & BRECK	RAFT BUILDING	031	32000		.	156	40000	22400	150000	127600
0047	B-1	PATERSON JOHN & C	BOOT/SHOE MF	174	17000		.	154	31200	100000	160000	60000
0068	C	B & O RAILWAY CO	CAR FACTORY	326	60000		.	138	29635	.	38497	.
0065	B-2	PENITENTIARY	BOOT/SHOE MF	174	50000		.	125	15000	.	150000	.
0047	A-1	LIVINGSTON/JOHNST	CLOTHING FACTORY	242	2000		.	124	26000	60000	110000	50000
0010	C-1	MCPHERSON JOHN &	BOOTS/SHOES	174	25000		.	122	45000	72000	120000	48000
0047	A-1	WALKER R & SONS	CLOTHING/DRY GOOD	242	20000		.	116	20000	60000	100000	40000
0065	B-2	PENITENTIARY	STONE MASONRY	421-S/353	1		.	116	13570	2512	17266	14754
0047	A-1		CLOTHING/MANTLE F	242/244	1000		.	100	15000	60000	90000	30000
0046	A-1	TAILUP THOS & CO	CLOTHING MF	243	21600		.	88	17000	58000	83000	25000
0047	B-1	HUGHES P & B B	TAILOR/MILLINERY	243/249-M	24000		.	84	18000	18000	60000	42000
0047	A-1	HOLMES JOHN	BOOT/SHOE FACTORY	174	4000		.	83	26000	60000	100000	40000
0077	A-2	SMILLIE BOURNE &	BANK NOTE COMPANY	286-B	100000		.	82	35000	20000	60000	40000
0010	D	MCMECHAN & CO	BOOT/SHOE FACTORY	174	25000		.	80	26000	29000	65000	36000
0046	A-1	EVAN BARCLAY	BOOT/SHOE MF	174	12000		.	80	15000	50000	75000	25000
0047	A-1	REID C P & CO	CIGAR MANUFACTORY	153	1500		.	80	26000	37050	73200	36150
0047	A-1	THE GLOBE	PUBLISHING OFFICE	289	60000		.	80	70000	110000	220000	110000
0046	A-1	WALTON W	CUT STONE WORKS	353	5000		.	73	28000	9000	42000	33000
0047	A-1	SANDERSON/WILLIAM	SHOE FACTORY	174	500		.	70	18200	20000	45000	25000
0015	D-2	BRETHOUR H W & C	CLOTHING/MILLINER	242/249-M	30000		.	68	18000	30000	55000	25000
0047	A-1	DREDGE A & CO	BOOKBINDING	287-B	.		.	64	10000	80000	125000	45000
0021	C	MUIR ALEX & BROS	SHIP BUILDING EST	327	9000		.	60	22960	12000	39000	27000
0047	B-1	FINCH W S	CLOTHING STORE	243/245	20000		.	60	10000	30000	45000	15000
0047	B-1	DACK/FORSYTH/LESL	BOOT/SHOE MF	174	10000		.	57	15600	12000	60000	48000
0047	A-1	KAY JOHN	MILLINERY/MANTLES	249-M/244	200		.	56	5000	20000	40000	20000
0047	B-1	THOMPSON THOMAS	CLOTHES/BOOT/SHOE	243/174	12000		.	56	18000	25000	70000	45000
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					621801		0	3019	739165	1331962	2702963	1182504

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